Snowmass Community Planning Meeting - Virtual

Report of Contributions

Contribution ID: **1**   Type: **not specified**

About Snowmass and Snowmass Planning Meeting

Session Classification: Plenary

Contribution ID: **2**   Type: **not specified**

Exciting Physics Before Us

Monday, October 5, 2020 11:20 AM (20 minutes)

Presenter: HEWETT, JoAnne (SLAC)

Session Classification: Plenary

Contribution ID: **3**   Type: **not specified**

Strategies and Plans in Other Regions: Europe and Russia

Monday, October 5, 2020 11:45 AM (20 minutes)

Primary frontier topic

Presenter: D'HONDT, Jorgen (Vrije Universiteit Brussel & IIHE)

Session Classification: Plenary

Contribution ID: **4**   Type: **not specified**

Strategies and Plans in Other Regions: Asia and Pacific

Monday, October 5, 2020 12:05 PM (20 minutes)

Primary frontier topic

Presenter: TAYLOR, Geoffrey (The University of Melbourne)

Session Classification: Plenary

Contribution ID: **5** Type: **not specified**

Break and Chat

Session Classification: Plenary One

Contribution ID: **6**   Type: **not specified**

Strategies and Plans in Other Regions: Canada

Monday, October 5, 2020 12:25 PM (10 minutes)

Presenter: VACHON, Brigitte (McGill University)

Session Classification: Plenary

Contribution ID: **7**   Type: **not specified**

Strategies and Plans in Other Regions: Latin America

Monday, October 5, 2020 12:35 PM (10 minutes)

Presenter: ROSENFELD, Rogério

Session Classification: Plenary

Contribution ID: **8** Type: **not specified**

Strategies and Plans in Other Regions: Africa and Middle East

Monday, October 5, 2020 12:45 PM (10 minutes)

Presenter: KHALIL, Shaaban

Session Classification: Plenary

Contribution ID: **9**   Type: **not specified**

Strategies and Plans in Related Fields: Astrophysics

Monday, October 5, 2020 1:25 PM (15 minutes)

Presenter: HARRISON, Fiona (Caltech)

Session Classification: Plenary

Contribution ID: **10**   Type: **not specified**

Strategies and Plans in Related Fields: Nuclear Physics

Monday, October 5, 2020 1:40 PM (15 minutes)

Presenter: SCHOLBERG, Kate (Duke University)

Session Classification: Plenary

Contribution ID: **11** Type: **not specified**

Remarks from Funding Agencies to the Snowmass Process: DOE

Monday, October 5, 2020 1:55 PM (10 minutes)

Presenter: SIEGRIST, Jim (DOE)

Session Classification: Plenary

Contribution ID: **12** Type: **not specified**

Remarks from Funding Agencies to the Snowmass Process: NSF

Monday, October 5, 2020 2:05 PM (10 minutes)

Presenter: GONZALEZ, Saul (NSF)

Session Classification: Plenary

Contribution ID: **13** Type: **not specified**

Report from Early Careers

Thursday, October 8, 2020 11:00 AM (20 minutes)

Presenters: AGARWAL, Garvita; BARROW, Joshua (The University of Tennessee); ENGEL, Kristi (University of Maryland, College Park); LEWIS, Tiffany (USRA); LIN, Yi-Hsuan "Cindy" (SNOLAB)

Session Classification: Plenary

Contribution ID: **14**   Type: **not specified**

Report from Energy Frontier

Thursday, October 8, 2020 11:20 AM (20 minutes)

Presenter: REINA, Laura (Florida State University)

Session Classification: Plenary

Contribution ID: **15**   Type: **not specified**

Report from Neutrino Frontier

Thursday, October 8, 2020 12:45 PM (20 minutes)

Presenter: WORCESTER, Elizabeth (BNL)

Session Classification: Plenary

Contribution ID: **16** Type: **not specified**

Report from Rare Processes and Precision Measurements Frontier

Thursday, October 8, 2020 11:40 AM (20 minutes)

Presenter: ARTUSO, Marina (syracuse university)

Session Classification: Plenary

Contribution ID: **17** Type: **not specified**

Report from Cosmic Frontier

Thursday, October 8, 2020 1:05 PM (20 minutes)

Presenter: TAIT, Tim (UC Irvine)

Session Classification: Plenary

Contribution ID: **18**   Type: **not specified**

Report from Theory Frontier

Thursday, October 8, 2020 2:25 PM (20 minutes)

Primary frontier topic

Presenter: CRAIG, Nathaniel (UC Santa Barbara)

Session Classification: Plenary

Contribution ID: **19**   Type: **not specified**

Report from Accelerator Frontier

Thursday, October 8, 2020 12:00 PM (20 minutes)

Primary frontier topic

Presenter: SHILTSEV, Vladimir (FNAL)

Session Classification: Plenary

Contribution ID: **20**   Type: **not specified**

Report from Instrumentation Frontier

Thursday, October 8, 2020 1:25 PM (20 minutes)

Primary frontier topic

Presenter: MERKEL, Petra (Fermi National Accelerator Laboratory)

Session Classification: Plenary

Contribution ID: **21**   Type: **not specified**

Report from Computing Frontier

Thursday, October 8, 2020 2:45 PM (20 minutes)

Presenter: GOTTLIEB, Steven (Indiana Univ.)

Session Classification: Plenary

Contribution ID: **22**   Type: **not specified**

Report from Underground Facilities and Infrastructure Frontier

Thursday, October 8, 2020 1:45 PM (20 minutes)

Presenter: ORRELL, John (Pacific Northwest National Laboratory)

Session Classification: Plenary

Contribution ID: **23**   Type: **not specified**

Reports from Ethics and Community Engagement Frontier

Thursday, October 8, 2020 3:05 PM (25 minutes)

Primary frontier topic

Presenters: ASSAMAGAN, Ketevi Adikle (Brookhaven National Laboratory);   TOMPKINS, Lauren (Stanford University)

Session Classification: Plenary

Contribution ID: **24** Type: **not specified**

Engaging the Community to Define the Future (1)

Thursday, October 8, 2020 3:30 PM (10 minutes)

Presenter: RITZ, Steve (UCSC and SCIPP)

Session Classification: Plenary

Contribution ID: **25**   Type: **not specified**

Engaging the Community to Define the Future (2)

Thursday, October 8, 2020 3:40 PM (10 minutes)

Presenter: GATES, Jim (Brown University)

Session Classification: Plenary

Contribution ID: **26**   Type: **not specified**

Closing Remarks

Thursday, October 8, 2020 3:55 PM (5 minutes)

Presenters: KIBURG, Brendan (Fermilab);   HAN, Tao (Univ. of Pittsburgh)

Session Classification: Plenary

Contribution ID: **28**   Type: **not specified**

Community Engagement Across the Frontiers

Wednesday, October 7, 2020 11:15 AM (1 hour)

Discussion with CEF and Other Frontier Liaisons

Primary frontier topic

Session Classification: Plenary

Contribution ID: **32**
Type: **not specified**

Alpha: Measurement of the fine structure constant as test of the Standard Model

Comparison of direct measurements of the fine structure constant via measuring the recoil velocity of an atom that scattered a photon from a laser beam, and those obtained from the electron's g-2, are some of the most comprehensive tests of the Standard Model. Based on our 2018 measurement (Parker et al., Science 360, 191), that is currently the most accurate, we report on a project to make a 10-20 fold improvement by taking the control over the spatial structure of the laser beam to the extreme.

Primary frontier topic

Rare Processes and Precision Measurements Frontier

Primary authors: MUELLER, Holger (UC Berkeley); BROWN, David (LBNL)

Presenter: MUELLER, Holger (UC Berkeley)

Session Classification: Community Town Hall

Contribution ID: **33** Type: **not specified**

A deci-Hz Gravitational-Wave Lunar Observatory for Cosmology

We are proposing Gravitational-Wave Lunar Observatory for Cosmology (GLOC) – a first of its kind fundamental physics experiment on the surface of the Moon. The experiment would access gravitational waves in the frequency range of deci-Hz to 5 Hz, a challenging regime for all Earth-based detectors and space missions. We find that such a lunar-based experiment can survey over 70% of the observable volume of our universe without significant background contamination. This unprecedented sensitivity makes GLOC a powerful cosmic probe for Dark Energy, Dark Matter and physics beyond the Standard Model. In particular, it will independently trace the Hubble expansion rate up to redshift $z \sim 3$, provide the strongest limits on the sub-solar Dark Matter candidates and test ΛCDM cosmology up to $z \sim 100$. Furthermore, it will have a unique access to gravitational waves from Type Ia supernovae, thus aiding calibration of the standard candles.

Primary frontier topic

Cosmic Frontier

Primary author: JANI, Karan (Vanderbilt University)

Presenter: JANI, Karan (Vanderbilt University)

Session Classification: Community Town Hall

Contribution ID: **34** Type: **not specified**

Testing SIDM with Realistic Galaxy Formation Simulations

The nature of dark matter remains one of the most important questions in physics. Because of the tremendous overall successes of the Cold Dark Matter (CDM) model, dark matter has been assumed to consist of a massive, weakly-interacting particle. However, the effort to detect such a particle with experiment have not yet yielded conclusive evidence. Although the CDM paradigm has been successful at describing our Universe on large scales, it has faced challenges on small scales (inside of galaxies and in low mass galaxies)- which has yielded alternative models including Self-Interacting Dark Matter (SIDM). As such, astrophysical measurements represent a compelling means of directly studying the properties of dark matter- in particular, the imprint of dark matter model on dwarf galaxies and their baryonic matter. This project uses state-of-the-art computer simulations of dwarf galaxy formation to test galaxy formation in the LCDM framework and in the SIDM framework, in order to constrain the nature of dark matter.

More technically, the project will result in a suite of high resolution, state-of-the art simulations of galaxy formation within a SIDM paradigm. SIDM preserves the large-scale success of CDM, while opening up the possibility of altering the small scales in testable ways using galaxy observations. We use the N-Body+SPH code ChaNGa to run a series of simulations: (1) "zoom" simulations of individual dwarf galaxies in order to test whether CDM or SIDM can reproduce the diverse range of rotation curves observed in real galaxies and (2) "zoom" volumes that contain dozens of dwarfs from 1000 solar masses to 10^9 solar masses in order to directly compare the observed shapes of galaxies with those predicted in CDM vs SIDM. Analytic models have shown that an SIDM model with an interaction cross-section of ˜3 cmˆ2 gˆ-1 can reproduce the full range of galaxy rotation curves. The project tests this model across a range of galaxy simulations for the first time.

Primary frontier topic

Theory Frontier

Primary author: MUNSHI, Ferah (University of Oklahoma)

Presenter: MUNSHI, Ferah (University of Oklahoma)

Session Classification: Community Town Hall

Contribution ID: **35**   Type: **not specified**

Searching for millicharged particles with scintillator based detectors

The successful search for millicharged particles with the milliQan demonstrator has proved the feasibility the detector design as well as providing important lessons for background mitigation and signal performance. For Snowmass, we are planning a publication that will use data and fully calibrated simulation from the demonstrator to provide projections for the reach of full-scale scintillator-based detectors at the LHC and neutrino beam sources (e.g. DUNE, J-PARC). As detailed in the letter of intent (https://www.snowmass21.org/docs/files/summaries/EF/SNOWMASS21-EF9_EF0-NF3_NF0-RF6_RF0_Matthew_Citron-072.pdf) submitted to EF09, this effort will include a comprehensive evaluation of the dominant backgrounds and how they may be mitigated, as well as a full consideration of the performance for signal. On behalf of those involved in this Snowmass project and the milliQan collaboration, I will briefly summarise how scintillator based detectors can be used to search for millicharged particles and how the sensitivity of such detectors at a range of sites will be evaluated.

Primary frontier topic

Energy Frontier

Primary author: CITRON, Matthew (Univ. of California Santa Barbara (US))

Presenter: CITRON, Matthew (Univ. of California Santa Barbara (US))

Session Classification: Community Town Hall

Contribution ID: **36**   Type: **not specified**

Future Information and Communications Technologies for HL-LHC Era: Beyond CMOS and Beyond the Shannon Limit

The revolutionary developments underway to overcome the looming barriers in electronic and photonic systems, and hence in computing and communications systems, to maintain progress and economies, offer unprecedented opportunities for our field. These include

•o Nanophotonics, plasmonics, and/or spintronics for ultrafast low energy signaling
o Beyond CMOS: memory, logic devices, integrated electronic/photonic systems
o Beyond Shannon long haul optical communications systems and methods: multicore fibers, spatial division multiplexing, orbital angular momentum and other degrees of freedom
o Metamaterials and devices: To shape and direct light, form wavefronts and frequency dependent beams; + programmably, on several time + distance scales

HEP, and community planning have until now taken only limited account of these Revolutions which will which affect more than computing: TriDAS, all communications, intelligent "coherent" systems; as well as our working + home environments

There will be great design and physics opportunities at the HL-LHC in 2030-38, and beyond for future experiments and accelerators.

The conclusion that follows from the above is that as a community we need to follow, join and lead some of these forefront developments, as part of our longterm experimental roadmap and our "frontiers". The above technologies and new directions will have an increasing role in the 2020s, and dominate the 2030s.

The issues, barriers, next generation technologies and opportunities are introduced and discussed further in this presentation, a short version of which was presented at the Snowmass Computational Frontier Kickoff Meeting on August 11 2020:

https://www.dropbox.com/s/61ym4u4gl3oayi7/FutureICTfor%20theHLLHC_2020to2030andBeyond_LongVersionhbn08102

Primary frontier topic

Computational Frontier

Primary author: NEWMAN, Harvey (Caltech)

Presenter: NEWMAN, Harvey (Caltech)

Session Classification: Community Town Hall

Contribution ID: **38** Type: **not specified**

Canada

Presenter: VACHON, Brigitte (McGill University)

Session Classification: Plenary One

Contribution ID: **39**   Type: **not specified**

Q/A w/ Plenary Speakers

Session Classification: Plenary

Contribution ID: **40** Type: **not specified**

Q/A w/ Plenary Speakers

Session Classification: Plenary

Contribution ID: **41** Type: **not specified**

Break and Chat

Session Classification: 115. Neutrinos, dark matter, and underground facilities

Contribution ID: **42** Type: **not specified**

Intro Talk

Primary frontier topic

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **43** Type: **not specified**

Break and Chat

Session Classification: 75. Cosmic Probes of Dark Matter Physics - #cpm_topic_75

Contribution ID: 44   Type: **not specified**

Detecting keV-range super-light dark matter using graphene Josephson junction

Understanding the nature of dart matter has been a long-standing conundrum in particle physics. While most theoretical and experimental efforts in the search for dark matter have been focused on the weakly interacting massive particles, the fact that there have been no conclusive signal observations increasingly motivates searches for other dark-matter candidates. Of them, keV-scale super-light dark matter is receiving particular attention, as its existence is a crucial criterion to determine the "coldness" of dark matter in cosmological history. However, the direct probe of such super-light dark matter has been an experimentally challenging task primarily due to the difficulty in achieving an extremely small energy threshold (E_{th}) as low as $\mathcal{O}(\text{meV})$. Very recently, a technological breakthrough for this experimental challenge has been reported in condensed matter physics, the graphene-based Josephson junction (GJJ) bolometer technology (arXiv:1909.05413, Nature accepted). The device using this "state-of-the-art" technology has shown the highest sensitivity to $E_{\text{th}} \sim 0.1$ meV. We demonstrate that the adoption of this GJJ-based bolometer can lead to an immediate and unprecedented sensitivity in exploring keV-range super-light dark matter, improving the minimum detectable mass by more than three orders of magnitude over the ongoing experiments (arXiv:2002.07821). We then report the current status of doing the first experiment with existing devices fabricated for the study in arXiv:1909.05413, and briefly mention other high energy physics applications, e.g., detection of cosmic neutrino background and search for other well-motivated super-light particles such as axion, sterile neutrino, and dark photon.

Primary frontier topic

Cosmic Frontier

Primary authors: KIM, Doojin (University of Arizona);   Dr KIM, Doojin (Texas A&M University)

Co-author: PARK, Jong-Chul (University of Kansas)

Presenters: KIM, Doojin (University of Arizona);   Dr KIM, Doojin (Texas A&M University)

Session Classification: Community Town Hall

Contribution ID: 47   Type: **not specified**

Testing Lepton Flavor Universality and CKM Unitarity with Rare Pion Decays

A next-generation rare pion decay experiment motivated by several inconsistencies between SM theory and data will probe new physics at high mass scales. Using state-of-the-art instrumentation, computational resources, and high-intensity beams, two problems can be addressed with nearly the same apparatus and beamline. The first is a measurement of the charged-pion branching ratio to electrons vs. muons, $R_{e/\mu}$, which is extremely sensitive to new physics effects. At present, the SM prediction for $R_{e/\mu}$ is known to a 2 parts in 10,000, which is 15 times more precise than the current experimental determination. An experiment at a comparable level of accuracy opens a large window to test lepton universality at an unprecedented level, probing mass scales up to 3000 TeV. The second measurement concentrates on the rare process of pion beta decay, $\pi^+ \to \pi^0 e^+ \nu(\gamma)$, as well as various complementary rare decays modes. An order of magnitude improvement in sensitivity will determine V_{ud} in a theoretically pristine manner and test CKM unitarity at the quantum loop level. We will base our design on lessons learned form the recent PIENU and PEN efforts at TRIUMF and PSI. Improved resolution, greatly increased calorimeter depth, high-speed detector and electronic response, large solid angle coverage, and complete event reconstruction are all critical to the design, including a 4π LXe calorimeter, an internal pixelated active stopping medium and electron tracker, as well as a customized beam line.

Primary frontier topic

Rare Processes and Precision Measurements Frontier

Primary author: Prof. HERTZOG, David

Presenter: Prof. HERTZOG, David

Session Classification: Community Town Hall

Contribution ID: **51**   Type: **not specified**

Welcome

Monday, October 5, 2020 11:00 AM (5 minutes)

Presenter: LOCKYER, Nigel (Fermilab)

Session Classification: Plenary

Contribution ID: **52** Type: **not specified**

Goals of the CPM and Snowmass Timeline

Monday, October 5, 2020 11:05 AM (10 minutes)

Presenter: KIM, Young-Kee Kim (The University of Chicago)

Session Classification: Plenary

Contribution ID: **53**   Type: **not specified**

Local Organizing Committee Welcome and Meeting Logistics

Monday, October 5, 2020 11:15 AM (5 minutes)

Presenter: JAYATILAKA, Bo (Fermilab)

Session Classification: Plenary

Contribution ID: 54   Type: **not specified**

Searches for Long-Lived Particles at the FCC-ee

The FCC-ee is a frontier Higgs, Top, Electroweak, and Flavour factory. It will be operated in a 100 km circular tunnel built in the CERN area, and will serve as the first step of the FCC integrated programme towards a 100 TeV and above proton-proton collisions in the same infrastructure. In addition to an essential and unique Higgs program, it offers powerful opportunities for discovery of direct or indirect evidence for BSM physics, via a combination of high precision measurements and searches for forbidden or rare processes, and feebly coupled particles.

The direct search for Long Lived particles (LLPs) in the high luminosity Z run, with 5 x 10ˆ12 Z produced, is particularly fertile; high statistics of Higgs, W and top decays in very clean experimental conditions will also be recorded. This motivates an out-of-the-box optimization of the experimental conditions, which is the object of a letter of intent submitted to EF08, EF09, EF10, and RF6.

Primary frontier topic

Energy Frontier

Primary author: GONZALEZ SUAREZ, Rebeca (Uppsala University)

Co-author: AZZI, Patrizia (INFN - LPC)

Presenters: GONZALEZ SUAREZ, Rebeca (Uppsala University); AZZI, Patrizia (INFN - LPC)

Session Classification: Community Town Hall

Contribution ID: **55**   Type: **not specified**

Panel Discussion on Future Accelerator Facilities

Thursday, October 8, 2020 9:00 AM (1 hour)

Global Accelerator Facilities for Future Particle Physics - Panel members include Fabiola Gianotti (CERN), Masa Yamauchi (KEK), Yifang Wang (IHEP-China), Nigel Lockyer (FNAL), Doon Gibbs (BNL)

Presenters: GIBBS, Doon (BNL); GIANOTTI, Fabiola (CERN); YAMAUCHI, Masa (KEK); LOCKYER, Nigel (Fermilab); WANG, Yifang (IHEP)

Session Classification: Plenary

Contribution ID: **59**   Type: **not specified**

Metastable Water: Breakthrough Technology for Dark Matter & Neutrinos

We will present a discussion of a new detector technology, the "Snowball Chamber," which is based on the phase transition (of liquid to solid) for metastable fluids. A water-based supercooled detector has the potential to move past the Neutrino Floor, and extend the reach of direct detection dark matter (DM) experiments to low-mass WIMP candidates for both spin-dependent (on the proton) and spin-independent interactions. The detector concept also has applications within coherent elastic neutrino-nucleus scattering experiments. Some of the foreseeable, potential pitfalls will be presented, alongside a brief vision of an R&D program toward the maturation of this technology.

In general, the marquee DM experiments are each mature, reliable, and expected to reach their sensitivity objectives; however, looking beyond the current generation, the parameter space of DM candidates accessible with current technology is limited. Instrumentation thresholds and the kinematics of elastic scattering constrain the lowest mass dark matter candidates that can be studied. The CEνNS of solar, atmospheric, and diffuse galactic supernova nu's will soon become a background (neutrino floor) that challenges the reach to lower cross-sections, made even more difficult by the required scale of future experiments. Without a new approach for detection technology, experimental searches will remain blind to important regions of parameter space. A new tech which pushes past the neutrino floor, extends sensitivities to low-mass dark matter candidate particles, and is insensitive to the conventional BGs could open up these new horizons. The path forward envisioned here builds on the transformative "Snowball Chamber" technology, a p-rich, supercooled liquid H2O detector. A host of related measurements within neutrino physics, utilizing the CEνNS interaction on O nuclei, and/or the potential of these detectors to track e- interactions, is likewise open to such a technology.

Primary frontier topic

Instrumentation Frontier

Primary author: SZYDAGIS, Matthew (UAlbany SUNY)

Presenter: SZYDAGIS, Matthew (UAlbany SUNY)

Session Classification: Community Town Hall

Contribution ID: **60** Type: **not specified**

ANNIE and the Future of Hybrid Neutrino Detectors

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) will continue to develop advanced neutrino detector technology in addition to pursuing an ambitious physics program in the Fermilab Booster Neutrino Beam. The current gadolinium-loaded water detector will develop new techniques using Large Area Picosecond PhotoDetectors (LAPPDs) to reconstruct muons from neutrino interactions in the forward direction. This talk describes using ANNIE to take the next step in the development of hybrid (Cherenkov plus Scintillation) optical detectors by replacing the current gadolinium-water target with Water-based Liquid Scintillator (WbLS) to allow reconstruction of neutron capture vertices, and increasing the coverage of LAPPDs to allow multi-track fitting in all directions using fast timing and precision photon location. This is a critical step towards demonstrating the power of hybrid detectors for a new generation of far detectors in long-baseline neutrino oscillation experiments and observatories for low-energy neutrinos.

Primary frontier topic

Neutrino Physics Frontier

Primary author: SANCHEZ, Mayly (Iowa State University)

Presenter: SANCHEZ, Mayly (Iowa State University)

Session Classification: Community Town Hall

Contribution ID: **65**   Type: **not specified**

Heterodyne Detection of Axion Dark Matter via Superconducting Cavities

We will present a novel approach to detecting dark matter axions in a Superconducting RF cavity. The approach relies on axion-mediated transitions between nearly-degenerate resonant modes, leading to parametrically enhanced signal power for light axions. This approach could probe axion masses across fifteen orders of magnitude, all in a metre-scale cavity.

Primary frontier topic

Cosmic Frontier

Primary authors: BERLIN, Asher (NYU); NANTISTA, Christopher (SLAC National Accelerator Laboratory); NEILSON, Jeffery (SLAC National Accelerator Laboratory); ZHOU, Kevin (Stanford); TORO, Natalia (SLAC National Accelerator Laboratory); SCHUSTER, Philip (SLAC); D'AGNOLO, Raffaele (CEA Saclay); TANTAWI, Sami (SLAC National Accelerator Laboratory); ELLIS, Sebastian (SLAC National Accelerator Laboratory)

Presenter: ELLIS, Sebastian (SLAC National Accelerator Laboratory)

Session Classification: Community Town Hall

Contribution ID: **73** Type: **not specified**

Superconducting Qubit Advantange for Dark Matter (SQuAD)

We describe two complementary strategies that utilize superconducting transmon qubits to enable future dark matter searches. First, we discuss a novel photon counting technique harnessing the quantum non demolition (QND) nature of the qubit-photon interaction, which allows us to subvert the quantum limit. We have demonstrated an unprecedented counting error rate equivalent to noise 15.7 dB below the standard quantum limit. This results in a factor of 1300 speed up of future dark matter searches. Second, we enhance the dark matter induced signal by initializing a microwave cavity in a large n-photon Fock state using the non-linearity of the qubit. With preliminary results in preparing the $n=10$ Fock state, we expect an enhancement of a factor of 10 in the dark matter induced signal. This transfer of technology from the quantum information community opens up new frontiers for dark matter searches in the 3-30 GHz range.

Primary frontier topic

Instrumentation Frontier

Primary authors: AGRAWAL, Ankur (University of Chicago, Fermilab); DIXIT, Akash (University of Chicago); SCHUSTER, David (U.Chicago); CHOU, Aaron (Fermilab)

Presenter: AGRAWAL, Ankur (University of Chicago, Fermilab)

Session Classification: Community Town Hall

Contribution ID: **76**   Type: **not specified**

DarkQuest and LongQuest at the 120~GeV Fermilab Main Injector

Expanding the mass range and techniques by which we search for dark matter is an important part of the worldwide particle physics program which has been specifically emphasized in the DOE Basic Research Needs for Dark Matter New Initiatives report. Accelerator-based searches for dark matter are a uniquely compelling part of this program as a way to both create and detect dark matter in the laboratory and explore the dark sector by searching for mediators and excited dark matter particles. Our proposal focuses on developing the DarkQuest experimental concept and related enhancements collectively referred to as LongQuest. DarkQuest is a proton fixed-target experiment with particular sensitivity to an array of visible dark sector signatures in the MeV-GeV mass range. Because it builds off of existing accelerator and detector infrastructure, it offers a powerful but low-cost experimental initiative that can be realized on a short timescale.

Primary frontier topic

Rare Processes and Precision Measurements Frontier

Primary author: TRAN, Nhan (FNAL)

Presenter: TRAN, Nhan (FNAL)

Session Classification: Community Town Hall

Contribution ID: **85**   Type: **not specified**

3D proton tomography at the EIC: TMD gluon distributions

The search for evidence of New Physics is in the viewfinder of current and forthcoming analyses at the Large Hadron Collider (LHC) and at new-generation hadron, lepton and lepton-hadron colliders. This is the best time to shore up our knowledge of strong interactions though and, more in particular, of the hadron structure in terms of parton distributions.

Although significant steps toward the formal definition of quark transverse-momentum dependent distribution functions (TMDs) and their extraction from experimental data through global fits has been made in the last years, the gluon-TMD field represents an almost unknown territory.

With the advent of the Electron-Ion Collider (EIC), a systematic study of observables very sensitive to gluon dynamics will become feasible, thus offering us a unique chance of deepening our knowledge of gluon TMDs, a largely unexplored territory particularly at low-x.

With the aim of fulfilling the need for a flexible model suited to phenomenology, we present a common framework for all T-even and gluon TMDs at twist-2, calculated in a spectator model for the parent nucleon and encoding effective small-x effects from the BFKL resummation. At variance with respect to previous works, our approach encodes a flexible parametrization for the spectator-mass spectral density, allowing us to improve the description in the small-x region.

An extension of our model to include twist-2 T-odd gluon TMDs is underway.

All these prospective developments are relevant in the exploration of the gluon dynamics inside nucleons and nuclei, which constitutes one of the major goals of the EIC project.

We believe that the inclusion of these topics in the SnowMass 2021 scientific program would accelerate progress of our understanding of both formal and phenomenological aspects of the hadron structure in wider kinematic ranges.

Primary frontier topic

Energy Frontier

Primary authors: Prof. BACCHETTA, Alessandro (University of Pavia and INFN); Dr CELIBERTO, Francesco Giovanni (University of Pavia and INFN); Dr RADICI, Marco (INFN Pavia); Dr TAELS, Pieter (CPT, Ecole Polytechnique, CNRS, Paris)

Presenter: Dr CELIBERTO, Francesco Giovanni (University of Pavia and INFN)

Session Classification: Community Town Hall

Contribution ID: **86**   Type: **not specified**

Colliding beam elastic pp and pd scattering to test T- and P-violation

To test T- and P-violation by proton EDM requires an electric storage ring (SR) with simultaneously counter-circulating, frozen-spin proton beams. The CPEDM feasibility study proposes a low-energy prototype ring with superimposed electric and magnetic bending storing frozen-spin 49.65 MeV (clock-wise) protons and pseudo-frozen spin 24.73 MeV (counter-clockwise) protons; pd combinations are also practical and interesting.

Such a SR in the collider mode can be used to search for beyond Standard Model semi-strong T-violation in elastic pp or pd scattering. Suggested by Lee & Wolfenstein, Prentki & Veltman and Okun, as a source of CP-violation, it still awaits the experimentum crucis.

Initial spin states are guaranteed by phase-lock technique developed by JEDI; a comparison of polarization effects in the direct and time-reversed reactions requires matching polarimetry of final-state particles. The notable exception is T-violation in collisions of vector polarized protons and tensor polarized deuterons.

Full final state polarimetry stops the scattered particles in azimuthally symmetric full acceptance tracking chambers of the polarimeter, totaling 3π sr. This high-efficiency polarimetry is feasible only because the scattered particles are soft enough to be stopped in the polarimeter, making collider experiments much superior to fixed target experiments.

Besides a comparison of the analyzing powers to final-state single-particle polarizations, an access to T-violation in double-spin observables will be possible. With a pp luminosity of 0.6 mb^{-1}s^{-1}, producing 10^8 elastic scatters per year, the time-reversal violation upper limits, currently at the level of a few 1%, could be lowered by more than one order in magnitude.

Primary frontier topic

Rare Processes and Precision Measurements Frontier

Primary author: Prof. TALMAN, Richard (Laboratory for Elementary-Particle Physics, Cornell University, Ithaca NY, 14850, USA)

Presenter: Prof. TALMAN, Richard (Laboratory for Elementary-Particle Physics, Cornell University, Ithaca NY, 14850, USA)

Session Classification: Community Town Hall

Contribution ID: **87**   Type: **not specified**

Theory motivation and benchmarks

Tuesday, October 6, 2020 11:30 AM (15 minutes)

Primary frontier topic

Presenters: SHAH, Nausheen (FNAL);   SHAH, Nausheen (Wayne State University)

Session Classification: 136. Heavier particle dark matter >˜ 10 GeV

Contribution ID: **88** Type: **not specified**

EF Overview

Tuesday, October 6, 2020 11:45 AM (10 minutes)

Primary frontier topic

Presenters: DOGLIONI, Caterina (Lund University); WANG, Liantao (University of Chicago)

Session Classification: 136. Heavier particle dark matter >˜ 10 GeV

Contribution ID: **89** Type: **not specified**

CF Overview

Tuesday, October 6, 2020 11:55 AM (10 minutes)

Primary frontier topic

Presenters: LIPPINCOTT, Hugh (UCSB); SLATYER, Tracy (Massachusetts Institute of Technology)

Session Classification: 136. Heavier particle dark matter >˜ 10 GeV

Contribution ID: **90**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 12:05 PM (25 minutes)

Session Classification: 136. Heavier particle dark matter >˜ 10 GeV

Contribution ID: **91**   Type: **not specified**

Initiative for Dark Matter in Europe and beyond

The European committee for Future Accelerators (ECFA), the Nuclear Physics European Collaboration Committee (NuPECC) and the Astroparticle Physics European Consortium (APPEC) have established a seminar to allow astroparticle, nuclear and particle physics researchers to peek into each other's activities, called the Joint ECFA-NuPECC-APPEC Seminar (JENAS) at Orsay, in October 2019. The identified overlapping challenges might transform via joint programs into stronger opportunities to further our understanding of nature.

In the spirit of further exploring topical synergies between these disciplines, APPEC, ECFA and NuPECC have issued a call for novel Expressions-of-Interest (EoI), seeking bottom-up and community thoughts expressed in a non-binding EoI for further discussion within the APPEC, ECFA and NuPECC committees or consortia. These thoughts can revolve around potential synergies in technology, physics, organization and/or applications. The submitted Expressions of Interest can be found here: http://nupecc.org/jenaa/?display=eois.

The initiative for Dark Matter in Europe and beyond (iDMEu) is such an expression of interest, which collects more than 300 signatories to date, including Snowmass participants. It aims to create a permanent and common platform to exploit synergies and complementarities in dark matter searches across different communities, as a broad and common approach to dark matter research is necessary given the nature of this challenge. We will discuss the origin of this initiative and its possible future evolution, as well as its plans to build an online meta-repository for dark matter resources.

Primary frontier topic

General

Primary authors: DOGLIONI, Caterina (Lund University); EOI PROPONENTS, iDMEu

Presenter: EOI PROPONENTS, iDMEu

Session Classification: Community Town Hall

Contribution ID: 98   Type: **not specified**

Perspective on a Unified U.S. Particle Physics Program

HEP finds itself at a most interesting time exploring energy and matter at its deepest level. There is more today that we do not understand about the universe than before and the community is bubbling with new ideas that have the potential to drive a new revolution. Currently, however, the field is dominated by mega-projects that leave little room for a broad spectrum of experimental research. The scientific merit of these large projects is unquestioned. HEP, however, stands to gain tremendously by exploiting non-traditional high-energy facilities to complement and expand its research portfolio. For example, ORNL has been developing the utilization of its neutron facilities for fundamental neutrino science. PROSPECT at HFIR and COHERENT at the SNS have demonstrated that these facilities can deliver world-class neutrino science. Searches for free neutron oscillations at these facilities provide unique opportunities to study other symmetry breaking mechanisms that are complementary and necessary to complete the picture of the fundamental interactions.

An inclusive approach both to the science program and to the development of facilities will allow for significant benefits. Two non-HEP accelerator projects, the proton power upgrade at ORNL, delivering a 2.8MW proton driver in 2025, and the EIC, are projects that can inform the future HEP research program. At ORNL a muon storage facility is being considered as a probe for materials studies and could provide a new source of muons for fundamental physics studies. The Material Plasma Exposure experiment will study materials in extreme radiation environments that could inform targetry for multi-megawatt neutrino sources.

A balanced program consisting of a mix of small and large projects is required for a healthy, broadband high energy physics program. Various opportunities will be identified to complement and strengthen a future high energy physics program for the community to embrace in its upcoming planning exercise.

Primary frontier topic

General

Primary author: DEMARTEAU, Marcel (Oak Ridge National Laboratory)

Presenter: DEMARTEAU, Marcel (Oak Ridge National Laboratory)

Session Classification: Community Town Hall

Contribution ID: **101**   Type: **not specified**

Towards Future Discoveries at the Energy Frontier

Collider physics is rich, diverse and versatile, and offers amazing opportunities for advancing our understanding of fundamental physics and for discoveries at the Energy Frontier. Over the last several decades, colliders have played a central role in experimental establishment of the Standard Model. Since the discovery of the Higgs boson, the science drivers at the energy frontier have been study the Higgs boson in great detail and precision, and use it as a new tool for discovery, search and identify the new physics of dark matter, and explore the unknown: new particles, interactions and physical principles.In particular probing new physics particles in the mass range of ˜10 TeV remains one of the highest priorities for the field.

The US should continue strong participation in global Energy Frontier efforts.A collider with energy reach significantly higher than LHC is of great interest, but e+e- Higgs factory is also very critical for deeper understanding of the SM. Several current proposals (ILC, CEPC, CLIC, FCC, MCC,etc) present the idea of hosting the next facilities in Europe or Asia. Strong physics motivation coupled with unique expertise, make it natural for US scientists to play a leading role in the next major Energy Frontier facilities, regardless of where in the world they are hosted.

Primary frontier topic

Energy Frontier

Primary author: CARENA, Marcela (Fermilab)

Presenter: CARENA, Marcela (Fermilab)

Session Classification: Community Town Hall

Contribution ID: **102**   Type: **not specified**

Gas TPCs with directional sensitivity to dark matter, neutrinos, and BSM physics

There is an opportunity to develop a long-term, diverse, and cost-effective US experimental program based on directional detection of nuclear recoils in gas TPCs.

Smaller, 1 m^3 scale detectors could detect and demonstrate directional sensitivity to Coherent Elastic Neutrino-Nucleus Scattering (CEvNS) at either NuMI or DUNE. This technology is also sensitive to beyond the Standard Model (BSM) physics in the form of low-mass dark matter, heavy sterile neutrinos, and axion-like particles. For every factor ten increase in exposure, new measurements are possible. A 10 m^3 detector could produce the strongest SD WIMP-proton cross section limits of any experiment across all WIMP masses. A 1000 m^3 detector would detect between 13 and 37 solar CEvNS events over six years. Larger volumes would bring sensitivity to neutrinos from an even wider range of sources, including galactic supernovae, nuclear reactors, and geological processes. An ambitious DUNE-scale detector, but operating at room temperature and atmospheric pressure, would have non-directional WIMP sensitivity comparable to any proposed experiment, and would, in addition, allow us to utilize directionality to penetrate deep into the neutrino floor.

If a dark matter signal is observed, this would mark the beginning of a new era in physics. A large directional detector would then hold the key to first establishing the galactic origin of the signal, and to subsequently map the local WIMP velocity distribution and explore the particle phenomenology of dark matter.

To understand and fully maximize the physics reach of gas TPCs as envisioned here, further phenomenological work on dark matter and neutrinos, improved micro-pattern gaseous detectors (MPGDs), customized front end electronics and novel region-of-interest triggers are needed. We encourage the wider dark matter, neutrino, and instrumentation communities participating in Snowmass to come together and help evaluate and improve this proposal.

Primary frontier topic

Cosmic Frontier

Primary authors: ARISTIZABAL SIERRA, Diego (Universidad Tecnica Federico Santa Mar\'{i}a); AWE, Connor (Duke University); BARACCHINI, Elisabetta (INFN, GSSI); BARBEAU, Phillip (Duke University); DUTTA, Bhaskar (Texas A&M University); LYNCH, Warren (University of Sheffield); SPOONER, Neil (University of Sheffield); BATTAT, James (Wellesley College); DEACONU, Cosmin (UChicago / KICP); ELDRIDGE, Callum (University of Sheffield); GHREAR, Majd (University of Haawaii); LEWIS, Peter (University of Bonn); LOOMBA, Dinesh (University of New Mexico); MACK, Katie J. (North Carolina State University); MARKOFF, Diane Markoff (North Carolina Central University); MULLER, Hans (University of Bonn); MIUCHI, Kentaro (Kobe University); O'HARE, Ciaran (University of Sydney); PHAN, Nguyen (Los Alamos National Laboratory); SCHOLBERG, Kate (Duke University); SNOWDEN-IFFT, Daniel (Occidental College); STRIGARI, Louis (Texas A&M University); THORPE, Thomas (GSSI); VAHSEN, Sven (University of Hawaii)

Presenter: VAHSEN, Sven (University of Hawaii)

Session Classification: Community Town Hall

Contribution ID: **103**   Type: **not specified**

Culture change is necessary, and it requires strategic planning

Racism and other forms of bigotry oppress, disenfranchise, and marginalize scientists of color in high-energy physics (HEP). Actions and patterns of behavior by individuals and groups, as well as policies and procedures of institutions are among the vectors of oppression. The evidence includes the underrepresentation of Black scientists and other scientists of color, regular acts of harassment against scientists of color (including women and people of minoritized genders), and systematic disenfranchisement of marginalized and minoritized people throughout pathways and systems of education.

Research communities have traditionally responded to this problem in a variety of ways, which have often fallen short of creating real change — i.e., when they don't address the deeply rooted source of the problem, and when strategic planning is not engaged. Moreover, these approaches place the purported beneficiaries in harm's way. To achieve a new community through real and sustained change, we therefore recommend 1) long-term strategic planning, 2) new modes of community organizing and decision-making, and 3) partnership with experts and professionals in anti-racism and related areas.

Energy, creativity, and well-understood protocols are used for planning and executing long-term scientific programs and experiments to make discoveries. Therefore, we also call on the HEP community to engage in the effort to drive change with similar imagination and discipline.

Primary frontier topic

Community Engagement Frontier

Primary author: Dr NORD, Brian

Presenter: Dr NORD, Brian

Session Classification: Community Town Hall

Contribution ID: **105**   Type: **not specified**

Snowmass as a path towards cultural change, and the role of collaborations

The field of physics has largely failed to provide equitable opportunity to all who have the desire to perform physics research. This is evident in many ways, for example: the underrepresentation of many identity groups in the physics community, and the nearly 75% of undergraduate women in physics who report some form of sexual harassment. Iniquities also exist in society at large, but as physicists, we have an obligation to address the iniquities particular to our field. This is becoming especially relevant as our scientific collaborations continue to grow. Many collaborations have started to rise to the occasion and begun implementing a wide range of initiatives to improve their individual cultures.

These initiatives, while necessary, are not enough, as many issues transcend collaborations. Individual collaborations lack the resources and institutional infrastructure for meaningful enforcement of community standards; for example, they struggle with enforcing Codes of Conduct, which can further contribute to a culture of oppression.

We are not experts in the fields of race theory or sexual harassment, so we must turn to the guidance already laid out in the many summative reports by experts and calls to action by marginalized communities. Collaborations should draw on the recommendations in these reports and work towards more equitable cultures, and must also work with agencies, Universities, laboratories, and professional organizations to implement relevant best practices to effectively address cross-cutting issues.

The problem of inequity in our field will not solve itself. We must confront it every day, well into the future. Every collaboration should be grappling with these issues with the same energy with which they pursue their science. Through the Snowmass process, we have a more direct route to call for change. A long-range plan for HEP must include a plan for systemic and institutional changes to create more equitable and just communities.

Primary frontier topic

Community Engagement Frontier

Primary authors: STIFTER, Kelly (Stanford University); BUUCK, Micah (SLAC National Accelerator Laboratory); DUFFY, Kirsty (Fermilab); KAMAHA, Alvine (University at Albany); LIPPIN-COTT, Hugh (UCSB); MANNINO, Rachel (University of Wisconsin); Prof. MESSIER, Mark (Indiana University); PALLADINO, Kimberly (University of Wisconsin Madison); Dr SHAW, Sally (UC Santa Barbara); SMITH, Erica (Indiana University)

Presenter: STIFTER, Kelly (Stanford University)

Session Classification: Community Town Hall

Contribution ID: **107**　　　　　　　　　　　　　　　　　　Type: **not specified**

Atomic/nuclear clocks and precision spectroscopy measurements for dark matter and dark sector searches

Rapid developments of atomic clocks and other precision spectroscopy techniques are making possible phenomenologically interesting searches for bosonic dark matter and new force carriers. Furthermore, it is realistic to expect in the next decade many orders of magnitude improvements in the sensitivity of these experiments. To take full advantage of new opportunities presented by these advances will require experimental and theoretical engagements from both atomic and particle physics communities.

Several directions are being pursued to drastically improve the reach of the clock and other precision spectroscopy experiments for DM detection:
(i) significant improvement of the current clocks, that is expected to rapidly evolve in the next decade;
(ii) development of clock networks at the new level of precision;
(iii) development of new atomic clocks based on highly charged ions (HCI) that have much higher sensitivities to the variation of alpha;
(iv)development of a nuclear clock that is based on a nuclear rather than atomic transition;
(v) dedicated precision spectroscopy experiments sensitive to higher DM masses than clocks;
(vi) development and implementation of new clock-comparison schemes specifically designed to improves reach of oscillatory and transient dark matter searches;
and (vii)˜development of molecular clocks
The experimental effort is strongly complimented by the development of high-precision atomic theory and particle physics model building.

Primary frontier topic

Cosmic Frontier

Primary author:　SAFRONOVA, Marianna (University of Delaware)

Presenter:　SAFRONOVA, Marianna (University of Delaware)

Session Classification:　Community Town Hall

Contribution ID: **109**   Type: **not specified**

Discussion on Higgs and Flavor

Tuesday, October 6, 2020 3:00 PM (15 minutes)

Presenter: CAIRO, Valentina (SLAC National Accelerator Laboratory (US))

Session Classification: 101. Higgs as a probe of new physics

Contribution ID: **110** Type: **not specified**

Discussion on Higgs Potential

Tuesday, October 6, 2020 3:45 PM (15 minutes)

Presenter: Dr SELVAGGI, Michele (CERN)

Session Classification: 101. Higgs as a probe of new physics

Contribution ID: **111**   Type: **not specified**

Discussion on Higgs and Flavor

Tuesday, October 6, 2020 3:15 PM (15 minutes)

Presenter: GROSSMAN, Yuval (Cornell University)

Session Classification: 101. Higgs as a probe of new physics

Contribution ID: **112** Type: **not specified**

Discussion on Higgs Potential

Tuesday, October 6, 2020 3:30 PM (15 minutes)

Presenter: MORRISSEY, David (Triumf)

Session Classification: 101. Higgs as a probe of new physics

Contribution ID: **113** Type: **not specified**

Introduction

Tuesday, October 6, 2020 3:00 PM (10 minutes)

Presenters: WHITESON, Daniel (UC Irvine); ACOSTA, Darin (University of Florida)

Session Classification: 123. Data Handling and AI/ML

Contribution ID: **114**   Type: **not specified**

Infiltration of AI/ML in Particle Physics

Tuesday, October 6, 2020 3:10 PM (20 minutes)

Primary frontier topic

Presenters: VLIMANT, Jean-Roch (California Institute of Technology); VLIMANT, Jean-Roch (California Institute of Technology)

Session Classification: 123. Data Handling and AI/ML

Contribution ID: **115**   Type: **not specified**

Panel discussion of the future of AI/ML

Tuesday, October 6, 2020 3:30 PM (30 minutes)

Presenters: MILLER, David (University of Chicago);   HEITMANN, Katrin (Argonne National Laboratory);   TRAN, Nhan (FNAL);   ZHANG, Rui (Michigan State University);   THAIS, Savannah (Yale University);   JU, Xiangyang (University of Wisconsin-Madison)

Session Classification: 123. Data Handling and AI/ML

Contribution ID: **116** Type: **not specified**

UHECRs and the muon problem

Wednesday, October 7, 2020 2:00 PM (20 minutes)

Presenter: Prof. ENGEL, Ralph (KIT Karlsruhe)

Session Classification: 138. Synergy of astro-particle physics and collider physics

Contribution ID: **117** Type: **not specified**

Charm production and IceCube backgrounds

Wednesday, October 7, 2020 2:20 PM (10 minutes)

Presenter: Prof. RENO, Mary Hall (University of Iowa)

Session Classification: 138. Synergy of astro-particle physics and collider physics

Contribution ID: **118**   Type: **not specified**

FASER, FASERnu, and the Forward Physics Facility (FPF)

Wednesday, October 7, 2020 2:35 PM (15 minutes)

Presenter: Prof. FENG, Jonathan (University of California Irvine)

Session Classification: 138. Synergy of astro-particle physics and collider physics

Contribution ID: **119**   Type: **not specified**

Measuring very forward hadrons at the LHC

Wednesday, October 7, 2020 2:50 PM (10 minutes)

Presenter: Prof. ALBROW, Michael (Fermilab)

Session Classification: 138. Synergy of astro-particle physics and collider physics

Contribution ID: **120**
Type: **not specified**

Cosmology Intertwined

Tuesday, October 6, 2020 12:30 PM (15 minutes)

Presenter: Dr DI VALENTINO, Eleonora (University of Manchester)

Session Classification: 139. Testing LambdaCDM cosmology at low and high redshifts

Contribution ID: **121**   Type: **not specified**

Town Hall Presentations

Monday, October 5, 2020 2:45 PM (1h 15m)

Mayly Sanchez - ANNIE and the Future of Hybrid Neutrino Detectors
Doojin Kim - Detecting keV-range super-light dark matter using graphene Josephson junction
Rebeca Gonzalez Suarez - Searches for Long-Lived Particles at the FCC-ee
David Hertzog - Testing Lepton Flavor Universality and CKM Unitarity with Rare Pion Decays
Sebastian Ellis - Heterodyne Detection of Axion Dark Matter via Superconducting Cavities
Marcela Carena - Towards Future Discoveries at the Energy Frontier
Philip Harris - DarkQuest and LongQuest at the 120~GeV Fermilab Main Injector
Marcel Demarteau - Perspective on a Unified US Particle Physics Program
Brian Nord - Culture change is necessary, and it requires strategic planning
Kelly Stifter - Snowmass as a path towards cultural change, and the role of collaborations
Sven Vahsen - Gas TPCs with directional sensitivity to dark matter, neutrinos, and BSM physics
Matthew Citron - Searching for millicharged particles with scintillator based detectors
Holger Mueller - Alpha: Measurement of the fine structure constant as test of the Standard Model
Harvey Newman - Future Information and Communications Technologies for HL-LHC Era: Beyond CMOS and Beyond the Shannon Limit
Marianna Safronova - Atomic/nuclear clocks and precision spectroscopy measurements for dark matter and dark sector searches
Francesco Giovanni Celiberto - 3D proton tomography at the EIC: TMD gluon distributions
Richard Talman - Colliding beam elastic pp and pd scattering to test T- and P-violation
Matthew Szydagis - Metastable Water: Breakthrough Technology for Dark Matter & Neutrinos
Karan Jani - A deci-Hz Gravitational-Wave Lunar Observatory for Cosmology
Ferah Munshi - Testing SIDM with Realistic Galaxy Formation Simulations
Ankur Agrawal - Superconducting Qubit Advantange for Dark Matter (SQuAD)
Caterina Doglioni - Initiative for Dark Matter in Europe and beyond

Primary frontier topic

Session Classification: Plenary

Contribution ID: **122** Type: **not specified**

Introduction

Wednesday, October 7, 2020 1:00 PM (5 minutes)

Presenters: SPELLER, Danielle (Johns Hopkins University); OREBI GANN, Gabriel (UC Berkeley / LBNL); LIPPINCOTT, Hugh (UCSB); BOLTON, Timothy

Session Classification: 115. Neutrinos, dark matter, and underground facilities

Contribution ID: **123**   Type: **not specified**

Panel discussion

Wednesday, October 7, 2020 1:05 PM (55 minutes)

Panel discussion among:
Mary Bishai
Laura Marini
Elaine McCluskey
Sean Paling
Kim Palladino
Nigel Smith
Bob Svoboda

Session Classification: 115. Neutrinos, dark matter, and underground facilities

Contribution ID: **124**   Type: **not specified**

Opportunities for Muon Research at PIP-II

Wednesday, October 7, 2020 1:00 PM (15 minutes)

Presenter: PREBYS, Eric (UC Davis)

Session Classification: 44. New accelerator concepts for high intensity muon beams

Contribution ID: **125**
Type: **not specified**

Synergy with Muon Collider R&D

Wednesday, October 7, 2020 1:15 PM (15 minutes)

Presenter: NEUFFER, David (Fermilab)

Session Classification: 44. New accelerator concepts for high intensity muon beams

Contribution ID: **126** Type: **not specified**

Muons from PSI and other Cyclotrons

Wednesday, October 7, 2020 1:30 PM (15 minutes)

Presenter: PAPA, Angela (Paul Scherrer Institut)

Session Classification: 44. New accelerator concepts for high intensity muon beams

Contribution ID: **127** Type: **not specified**

Discussion

Wednesday, October 7, 2020 1:50 PM (10 minutes)

Session Classification: 44. New accelerator concepts for high intensity muon beams

Contribution ID: **128** Type: **not specified**

Introduction

Tuesday, October 6, 2020 3:00 PM (4 minutes)

Primary frontier topic

Presenters: NG, Cho-Kuen (SLAC National Accelerator Laboratory); VAY, Jean-Luc (Lawrence Berkeley National Laboratory)

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **129**　　　　　　　　　　　　　　　　　　Type: **not specified**

Accelerators & beam physics trends

Tuesday, October 6, 2020 3:04 PM (5 minutes)

Presenter: NAGAITSEV, Sergei (FNAL)

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **130** Type: **not specified**

Future computer & programming trends

Tuesday, October 6, 2020 3:09 PM (5 minutes)

Presenter: Dr HUEBL, Axel (Lawrence Berkeley National Laboratory, USA)

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **131**   Type: **not specified**

3 minutes summaries of LOIs by topics

Tuesday, October 6, 2020 3:14 PM (21 minutes)

- AI/ML (4 LOIs): Auralee Edelen
- Physics for Conventional Accelerators (5 LOIs) - Cho Ng
- Physics for Advanced Accelerator Concepts (3 LOIs) - Nathan Cook
- Shared Simulation Tools (6 LOIs) - Jean-Luc Vay
- Cross-Cutting Standardization and Practice (3 LOIs) - Axel Huebl
- Community organization (3 LOIs) - David Bruhwiler
- Quantum Computing (1 LOI) - He Zhang

Primary frontier topic

Presenters: EDELEN, Auralee (SLAC); NG, Cho-Kuen (SLAC National Accelerator Laboratory); COOK, Nathan (RadiaSoft); VAY, Jean-Luc (Lawrence Berkeley National Laboratory); HUEBL, Axel (Lawrence Berkeley National Laboratory, USA); BRUHWILER, David (RadiaSoft LLC); ZHANG, He (Jefferson Lab)

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **132** Type: **not specified**

Open discussion (comments, missing topics, ...)

Tuesday, October 6, 2020 3:35 PM (15 minutes)

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **133**   Type: **not specified**

Planning next steps

Tuesday, October 6, 2020 3:50 PM (10 minutes)

- Beam and Accelerator Modeling Interest Group meetings
- Workshops?
- White papers: how many? Topics?
- …

Session Classification: 64. Computing Needs of the Accelerator Frontier

Contribution ID: **134** Type: **not specified**

Report from BRN on Instrumentation

Tuesday, October 6, 2020 3:10 PM (10 minutes)

Presenter: GUENETTE, Roxanne (Harvard University)

Session Classification: 51. Requirements for low background and underground detectors

Contribution ID: 135 Type: **not specified**

LOI/Snowmass summary to date

Tuesday, October 6, 2020 3:00 PM (10 minutes)

Presenters: POCAR, Andrea (university of massachusetts, amherst); JONES, Benjamin (UTA); SPELLER, Danielle (Johns Hopkins University); LIPPINCOTT, Hugh (UCSB); SANCHEZ, Mayly (Iowa State University)

Session Classification: 51. Requirements for low background and underground detectors

Contribution ID: **136**   Type: **not specified**

Strategic considerations

Tuesday, October 6, 2020 3:20 PM (10 minutes)

Primary frontier topic

Presenters: KLEIN, Joshua (University of Pennsylvania); KLEIN, Joshua

Session Classification: 51. Requirements for low background and underground detectors

Contribution ID: **137**
Type: **not specified**

Panel discussion

Tuesday, October 6, 2020 3:30 PM (30 minutes)

Session Classification: 51. Requirements for low background and underground detectors

Contribution ID: **138** Type: **not specified**

EF Activities and Focus Questions

Tuesday, October 6, 2020 11:00 AM (25 minutes)

Presenter: TRICOLI, Alessandro (BNL)

Session Classification: 1. EF Intro (#cpm_ef_intro)

Contribution ID: **139**   Type: **not specified**

Discussion

Session Classification: 1. EF Intro (#cpm_ef_intro)

Contribution ID: **140**   Type: **not specified**

Early Career activities in EF

Wednesday, October 7, 2020 3:00 PM (10 minutes)

Presenters: ROEPE, Amber; CUMMINGS, Grace (University of Virginia)

Session Classification: 201. EF Planning (#cpm_ef_planning)

Contribution ID: **141** Type: **not specified**

Monte Carlo Task Force activities and plans for Production

Wednesday, October 7, 2020 3:10 PM (30 minutes)

Presenter: STUPAK, John (University of Oklahoma)

Session Classification: 201. EF Planning (#cpm_ef_planning)

Contribution ID: **142** Type: **not specified**

EF Planning and Community Feedback

Wednesday, October 7, 2020 3:40 PM (20 minutes)

Presenter: NARAIN, Meenakshi (Brown University)

Session Classification: 201. EF Planning (#cpm_ef_planning)

Contribution ID: **143**   Type: **not specified**

Cosmic Origins

Tuesday, October 6, 2020 11:30 AM (7 minutes)

Presenter: SIMONOVIĆ , Marko

Session Classification: 72. Dark Energy, Origins (Inflation), and Light Relics - #cpm_topic_72

Contribution ID: **144**   Type: **not specified**

Gravitational View of the Early Universe

Tuesday, October 6, 2020 11:40 AM (7 minutes)

Presenter: KOZACZUK, Jonathan

Session Classification: 72. Dark Energy, Origins (Inflation), and Light Relics - #cpm_topic_72

Contribution ID: **145**   Type: **not specified**

Light Relics

Tuesday, October 6, 2020 11:50 AM (10 minutes)

Light Relics and Dark sectors

Presenters: WALLISCH, Benjamin (Institute of Advanced Study & University of California, San Diego); KNAPEN, Simon

Session Classification: 72. Dark Energy, Origins (Inflation), and Light Relics - #cpm_topic_72

Contribution ID: **146**   Type: **not specified**

Dark Energy

Tuesday, October 6, 2020 12:03 PM (7 minutes)

Presenter: FERRARO, Simone

Session Classification: 72. Dark Energy, Origins (Inflation), and Light Relics - #cpm_topic_72

Contribution ID: **147**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 12:13 PM (17 minutes)

Session Classification: 72. Dark Energy, Origins (Inflation), and Light Relics - #cpm_topic_72

Contribution ID: **148** Type: **not specified**

Higgs properties projections for the HL-LHC

Tuesday, October 6, 2020 11:30 AM (12 minutes)

Presenter: GILBERT, Andrew (Northwestern University)

Session Classification: 129. Higgs Factories

Contribution ID: **149**   Type: **not specified**

Higgs properties projections at future e+e- Colliders

Tuesday, October 6, 2020 11:45 AM (12 minutes)

Presenter: TIAN, Junping (University of Tokyo)

Session Classification: 129. Higgs Factories

Contribution ID: **150**   Type: **not specified**

Higgs Factory, the next steps for EF/AF/TF

Tuesday, October 6, 2020 12:30 PM (25 minutes)

Primary frontier topic

Presenters: GROJEAN, Christophe (CERN);   AZZI, Patrizia (INFN - LPC);   ENO, Sarah;   GESSNER, Spencer (SLAC)

Session Classification: 129. Higgs Factories

Contribution ID: **151** Type: **not specified**

Introduction

Wednesday, October 7, 2020 1:00 PM (15 minutes)

Presenters: YU, Hai-Bo; SLATYER, Tracy

Session Classification: 75. Cosmic Probes of Dark Matter Physics - #cpm_topic_75

Contribution ID: **152** Type: **not specified**

Breakout Discussions

Wednesday, October 7, 2020 1:15 PM (45 minutes)

Session Classification: 75. Cosmic Probes of Dark Matter Physics - #cpm_topic_75

Contribution ID: **153**   Type: **not specified**

Path Forward

Wednesday, October 7, 2020 2:00 PM (20 minutes)

Session Classification: 75. Cosmic Probes of Dark Matter Physics - #cpm_topic_75

Contribution ID: **154**   Type: **not specified**

CEPC (already presented on Sep 30, 2020)

Tuesday, October 6, 2020 11:59 AM (1 minute)

Presenter: GAO, Jie (IHEP)

Session Classification: 129. Higgs Factories

Contribution ID: **155** Type: **not specified**

ILC

Tuesday, October 6, 2020 12:00 PM (5 minutes)

Presenters: ROSS, Marc (SLAC); MICHIZONO, Shinichiro (KEK)

Session Classification: 129. Higgs Factories

Contribution ID: **156** Type: **not specified**

FCC-ee

Tuesday, October 6, 2020 12:05 PM (5 minutes)

Primary frontier topic

Presenter: ZIMMERMANN, Frank (CERN)

Session Classification: 129. Higgs Factories

Contribution ID: **157** Type: **not specified**

CLIC

Tuesday, October 6, 2020 12:10 PM (5 minutes)

Presenter: STAPNES, Steinar (FNAL)

Session Classification: 129. Higgs Factories

Contribution ID: **158**   Type: **not specified**

Muon Collider Higgs Factory

Tuesday, October 6, 2020 12:15 PM (5 minutes)

Presenter: PALMER, Mark (Brookhaven National Laboratory)

Session Classification: 129. Higgs Factories

Contribution ID: 159   Type: **not specified**

The Cˆ3 Linear Accelerator Concept and its application to e+/e- colliders and novel g-g colliders

Tuesday, October 6, 2020 12:20 PM (5 minutes)

Primary frontier topic

Presenter: TANTAWI, Sami (SLAC)

Session Classification: 129. Higgs Factories

Contribution ID: **160** Type: **not specified**

ERL-based FCCee

Tuesday, October 6, 2020 12:25 PM (5 minutes)

Primary frontier topic

Presenter: LITVINENKO, Vladimir (BNL)

Session Classification: 129. Higgs Factories

Contribution ID: **161** Type: **not specified**

Discussion

Tuesday, October 6, 2020 1:00 PM (30 minutes)

Session Classification: 69. Instrumentation for Future Optical Surveys - #cpm_topic_69

Contribution ID: **165**   Type: **not specified**

Extending subtraction schemes to N3LO

Tuesday, October 6, 2020 1:30 PM (18 minutes)

Presenter: CAOLA, Fabrizio (Johns Hopkins University)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **166**
Type: **not specified**

Discussion

Tuesday, October 6, 2020 1:48 PM (5 minutes)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **167**   Type: **not specified**

EW effects in parton showers at high energy

Tuesday, October 6, 2020 1:53 PM (18 minutes)

Presenter: WEBBER, Bryan (University of Cambridge)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **168** Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:11 PM (5 minutes)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **169** Type: **not specified**

Five-point QCD amplitudes at two loops

Tuesday, October 6, 2020 2:16 PM (18 minutes)

Presenter: ITA, Harald (University of Freiburg)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **170**
Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:34 PM (5 minutes)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **171**   Type: **not specified**

Higher-order corrections for HZ production and related techniques

Tuesday, October 6, 2020 2:39 PM (18 minutes)

Presenter: LI, Zhao (Institute of High Energy Physics)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **172** Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:57 PM (5 minutes)

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **173**   Type: **not specified**

General discussion and closing remarks

Tuesday, October 6, 2020 3:02 PM (13 minutes)

Presenter: ORGANIZERS AND PARTICIPANTS, Session

Session Classification: 128. From Amplitudes to Precision Theory for Future Colliders

Contribution ID: **174** Type: **not specified**

Theory overview (15'+5')

Wednesday, October 7, 2020 1:00 PM (20 minutes)

Primary frontier topic

Presenter: GRINSTEIN, Benjamin (UCSD)

Session Classification: 41. Anomalies in Flavor Physics

Contribution ID: **175**   Type: **not specified**

Experimental overview (10'+5')

Wednesday, October 7, 2020 1:20 PM (15 minutes)

Presenter: TRABELSI, Karim (IJCLab Orsay)

Session Classification: 41. Anomalies in Flavor Physics

Contribution ID: **176** Type: **not specified**

Open discussion

Wednesday, October 7, 2020 1:35 PM (25 minutes)

Primary frontier topic

Session Classification: 41. Anomalies in Flavor Physics

Contribution ID: **177**   Type: **not specified**

Overview of Neutrino Masses and the Nature of Neutrinos

Tuesday, October 6, 2020 11:30 AM (25 minutes)

Presenter: Prof. SMIRNOV, Alexei

Session Classification: 109. Determining the Masses and Nature of Neutrinos

Contribution ID: **178**   Type: **not specified**

Direct searches for neutrino masses

Tuesday, October 6, 2020 11:55 AM (25 minutes)

Presenter: Prof. FORMAGGIO, Joseph

Session Classification: 109. Determining the Masses and Nature of Neutrinos

Contribution ID: **179**   Type: **not specified**

Neutrinos in cosmology

Tuesday, October 6, 2020 12:45 PM (25 minutes)

Primary frontier topic

Presenter: Prof. LOVERDE, Marilena

Session Classification: 109. Determining the Masses and Nature of Neutrinos

Contribution ID: **180**   Type: **not specified**

Neutrinoless double beta decay

Tuesday, October 6, 2020 12:20 PM (25 minutes)

Primary frontier topic

Presenter: Dr KAUFMAN, Lisa

Session Classification: 109. Determining the Masses and Nature of Neutrinos

Contribution ID: **181** Type: **not specified**

LHC EFT studies

Tuesday, October 6, 2020 11:30 AM (15 minutes)

Presenter: LOHWASSER, Kristin

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **182**   Type: **not specified**

Removing Flat Directions in SMEFT Fits: Complementing the LHC with polarized EIC data

Tuesday, October 6, 2020 11:47 AM (15 minutes)

Presenter: WIEGAND, Daniel (Northwestern University/Argonne National Lab)

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **183** Type: **not specified**

Low-energy SMEFT

Tuesday, October 6, 2020 12:04 PM (15 minutes)

Presenter: DE VRIES, Jordy (UMass)

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **184**   Type: **not specified**

Operator series and theory errors

Tuesday, October 6, 2020 12:21 PM (20 minutes)

Presenters: MARTIN, Adam (University of Notre Dame);   MARTIN, Adam (Fermilab)

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **185** Type: **not specified**

Dark Matter EFT

Tuesday, October 6, 2020 12:43 PM (15 minutes)

Presenter: SOLON, Mikhail

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **186** Type: **not specified**

SMEFT global fits

Tuesday, October 6, 2020 1:00 PM (10 minutes)

Presenter: BELLONI, Alberto

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **187** Type: **not specified**

Discussion

Tuesday, October 6, 2020 1:10 PM (5 minutes)

Extended discussion after 1:30pm CDT in separate Zoom room:
https://pitt.zoom.us/j/98818754052
Meeting ID: 988 1875 4052
Passcode: 125

Session Classification: 125. EFTs for new physics sensitivity studies

Contribution ID: **188** Type: **not specified**

Introduction

Tuesday, October 6, 2020 2:00 PM (10 minutes)

by all the convenors of this session

Session Classification: 127. Searches for dark sectors

Contribution ID: **189** Type: **not specified**

Introduction (Zhirong Huang et al.)

Tuesday, October 6, 2020 11:30 AM (5 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **190** Type: **not specified**

GARD test facilities (Vitaly Yakimenko, SLAC)

Tuesday, October 6, 2020 11:35 AM (10 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **191** Type: **not specified**

International test facilities (Ralph Assmann, DESY)

Tuesday, October 6, 2020 11:45 AM (10 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **192**
Type: **not specified**

Direct Detection (CF1/TF9) overview

Tuesday, October 6, 2020 2:20 PM (10 minutes)

Presenter: ESSIG, Rouven (Stony Brook University)

Session Classification: 127. Searches for dark sectors

Contribution ID: **193** Type: **not specified**

Universities (Ritchie Patterson, Cornell)

Tuesday, October 6, 2020 11:55 AM (10 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **194** Type: **not specified**

Cosmic Probes / Gravitational Wave (CF5/CF7/TF9) overview

Tuesday, October 6, 2020 2:40 PM (10 minutes)

Presenters: SATHYAPRAKASH, Bangalore (Penn State University); Prof. CALDWELL, Robert (Dartmouth College)

Session Classification: 127. Searches for dark sectors

Contribution ID: **195**   Type: **not specified**

Energy Frontier Probes (EF9/AF5)

Tuesday, October 6, 2020 3:00 PM (10 minutes)

Presenter: BEACHAM, James (Duke University (US))

Session Classification: 127. Searches for dark sectors

Contribution ID: **196** Type: **not specified**

Low-energy test facilities (Edith Nissen, Jlab)

Tuesday, October 6, 2020 12:05 PM (5 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **197**
Type: **not specified**

Neutrino Frontier Probes (NF/AF5)

Tuesday, October 6, 2020 3:20 PM (10 minutes)

Presenter: KELLY, Kevin

Session Classification: 127. Searches for dark sectors

Contribution ID: **198** Type: **not specified**

CBETA (Georg Hoffstaetter, Cornell)

Tuesday, October 6, 2020 12:10 PM (5 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **199** Type: **not specified**

Rare Process Frontier Probes (RF6/AF5)

Tuesday, October 6, 2020 3:40 PM (10 minutes)

Presenters: GORI, Stefania (University of Chicago); GORI, Stefania (UC Santa Cruz); GORI, Stefania (University of Chicago); GORI, Stefania (UC Santa Cruz); GORI, Stefania (Perimeter Institute)

Session Classification: 127. Searches for dark sectors

Contribution ID: **200** Type: **not specified**

Any additional contributions

Tuesday, October 6, 2020 12:15 PM (5 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **201** Type: **not specified**

General discussions

Tuesday, October 6, 2020 12:20 PM (10 minutes)

Session Classification: 175. Accelerator research centers and test facilities for future accelerators

Contribution ID: **203** Type: **not specified**

Particle Dark Matter and Neutrino Needs

Tuesday, October 6, 2020 11:30 AM (15 minutes)

Presenter: FIGUEROA-FELICIANO, Enectali (Northwestern University)

Session Classification: 77. Quantum Sensors for Wave and Particle Detection

Contribution ID: **204** Type: **not specified**

Wave-like Dark Matter Needs

Tuesday, October 6, 2020 11:45 AM (15 minutes)

Presenter: KIMBALL, Derek (California State University -East Bay)

Session Classification: 77. Quantum Sensors for Wave and Particle Detection

Contribution ID: **205**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 12:00 PM (30 minutes)

Session Classification: 77. Quantum Sensors for Wave and Particle Detection

Contribution ID: **206** Type: **not specified**

Panel: Neutrinos as Probes of Standard Particle Physics

Tuesday, October 6, 2020 3:05 PM (30 minutes)

Panel Members: George Fuller, Rajan Gupta, Alec Habig, Kendall Mahn, Ulrich Mosel, Hallsie Reno

Session Classification: 97. Neutrinos as Probes of Standard and BSM Particle Physics

Contribution ID: **207** Type: **not specified**

Panel: Neutrinos as Probes of BSM Physics

Tuesday, October 6, 2020 3:35 PM (25 minutes)

Marco Drewes, Darren Grant, Doojin Kim, Elisa Resconi

Session Classification: 97. Neutrinos as Probes of Standard and BSM Particle Physics

Contribution ID: **208**   Type: **not specified**

#72 - Cosmic Surveys and Fundamental Physics

Wednesday, October 7, 2020 12:20 PM (5 minutes)

Presenter: DRLICA-WAGNER, Alex (Fermilab)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **209** Type: **not specified**

#74 - Atomic to Cosmic: Wave Dark Matter and Beyond

Wednesday, October 7, 2020 12:25 PM (5 minutes)

Presenter: RYBKA, Gray (University of Washington)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **210** Type: **not specified**

#75 - Cosmic Probes of Dark Matter

Wednesday, October 7, 2020 12:30 PM (5 minutes)

Presenter: DRLICA-WAGNER, Alex (Fermilab)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **211** Type: **not specified**

#77 - Quantum Sensors

Wednesday, October 7, 2020 12:35 PM (5 minutes)

Presenter: WINSLOW, Lindley (MIT)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **212** Type: **not specified**

#97 - Neutrinos and Astrophysics

Wednesday, October 7, 2020 12:40 PM (5 minutes)

Presenter: BALANTEKIN, Baha (University of Wisconsin)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **213**   Type: **not specified**

#108 - Accelerator Probes of Light Dark Matter (keV-GeV)

Wednesday, October 7, 2020 12:45 PM (5 minutes)

Presenter: BATELL, Brian (University of Pittsburgh)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **214**   Type: **not specified**

#115 - Neutrinos and underground facilities

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **215** Type: **not specified**

#127 - Searches for Dark Sectors

Wednesday, October 7, 2020 12:50 PM (5 minutes)

Presenter: TORO, Natalia (SLAC National Accelerator Laboratory)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **216**   Type: **not specified**

#137 - High and ultrahigh energy neutrino experiments

Wednesday, October 7, 2020 12:15 PM (5 minutes)

Primary frontier topic

Presenter: O'SULLIVAN, Erin (Uppsala University)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **217**   Type: **not specified**

#136 - Heavier particle dark matter >10 GeV

Wednesday, October 7, 2020 12:55 PM (5 minutes)

Presenter: DOGLIONI, Caterina (Lund University)

Session Classification: 150. Dark matter complementarity - #cpm_topic_150

Contribution ID: **218**   Type: **not specified**

Computing Resources and Access

Tuesday, October 6, 2020 1:30 PM (20 minutes)

Presenter: WUERTHWEIN, Frank (UCSD)

Session Classification: 81. Computing Requirements/Opportunities NF

Contribution ID: **219**　　　　　　　　　　　　　　　　　Type: **not specified**

Data Preservation

Tuesday, October 6, 2020 1:50 PM (20 minutes)

Presenter:　ASAADI, Jonathan (University of Texas Arlington)

Session Classification:　81. Computing Requirements/Opportunities NF

Contribution ID: **220** Type: **not specified**

Can we handle uncertainties better?

Tuesday, October 6, 2020 2:10 PM (20 minutes)

Presenter: TERAO, Kazuhiro (SLAC National Accelerator Laboratory)

Session Classification: 81. Computing Requirements/Opportunities NF

Contribution ID: **221** Type: **not specified**

Discussion

Session Classification: 41. Anomalies in Flavor Physics

Contribution ID: **222** Type: **not specified**

Physics potential.

Tuesday, October 6, 2020 3:00 PM (30 minutes)

Presenter: PESKIN, Michael (SLAC)

Session Classification: 183. Intermediate lepton collision energies between 500 GeV and 3 TeV

Contribution ID: **223** Type: **not specified**

Machine options

Tuesday, October 6, 2020 3:30 PM (30 minutes)

Presenter: GESSNER, Spencer (SLAC)

Session Classification: 183. Intermediate lepton collision energies between 500 GeV and 3 TeV

Contribution ID: **224**   Type: **not specified**

Overview: beyond the BRN report

Tuesday, October 6, 2020 12:30 PM (20 minutes)

Presenters: VERNIERI, Caterina (SLAC); LINSSEN, Lucie (CERN); ARTUSO, Marina (syracuse university); TITOV, Maxim (CEA Saclay); YOHAY, Rachel (Florida State University)

Session Classification: 131. Physics requirements for HEP colliders

Contribution ID: **225**   Type: **not specified**

Requirements from LLP searches

Tuesday, October 6, 2020 12:50 PM (20 minutes)

Presenters: LUBATTI, Henry (University of Washington, Seattle);   LIST, Jenny (DESY);   LEE, Lawrence (Harvard University); STONE, Sheldon (Syracuse University); PAGAN GRISO, Simone (Lawrence Berkeley National Laboratory);   GERSHTEIN, Yuri (Rutgers University)

Session Classification: 131. Physics requirements for HEP colliders

Contribution ID: **226**   Type: **not specified**

Requirements from substructure and jet reconstruction

Tuesday, October 6, 2020 1:10 PM (20 minutes)

Primary frontier topic

Presenters: APRESYAN, Artur (Fermilab); KOTWAL, Ashutosh (Duke University); LIST, Jenny (DESY); VOS, Marcel (IFIC (UVEG/CSIC) Valencia); CHEKANOV, Sergei (ANL)

Session Classification: 131. Physics requirements for HEP colliders

Contribution ID: **227**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 3:50 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **228**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 3:30 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **229**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 3:10 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **230**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:50 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **231** Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:30 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **232**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:10 PM (10 minutes)

Session Classification: 127. Searches for dark sectors

Contribution ID: **233**   Type: **not specified**

Overview on light dark matter cosmology (15' + 5')

Tuesday, October 6, 2020 11:30 AM (20 minutes)

Presenters: BLINOV, Nikita (SLAC National Accelerator Laboratory); BLINOV, Nikita

Session Classification: 108. Accelerator Probes of Light Dark Matter (keV-GeV)

Contribution ID: **234** Type: **not specified**

RF6 Light dark matter studies at high intensities (15' + 5')

Tuesday, October 6, 2020 11:50 AM (20 minutes)

Presenter: KRNJAIC, Gordan (Fermilab)

Session Classification: 108. Accelerator Probes of Light Dark Matter (keV-GeV)

Contribution ID: **235**   Type: **not specified**

NF03 Light dark matter at accelerator neutrino facilities (15' + 5)

Tuesday, October 6, 2020 12:10 PM (20 minutes)

Presenter: JANG, Wooyoung (University of Texas at Arlington)

Session Classification: 108. Accelerator Probes of Light Dark Matter (keV-GeV)

Contribution ID: **236**   Type: **not specified**

EF10 Light dark matter at high energies (15' + 5')

Tuesday, October 6, 2020 1:00 PM (20 minutes)

Presenter: KULKARNI, Suchita

Session Classification: 108. Accelerator Probes of Light Dark Matter (keV-GeV)

Contribution ID: **237**   Type: **not specified**

Discussion (10')

Tuesday, October 6, 2020 1:20 PM (10 minutes)

Session Classification: 108. Accelerator Probes of Light Dark Matter (keV-GeV)

Contribution ID: **238** Type: **not specified**

IF Introduction

Tuesday, October 6, 2020 11:00 AM (15 minutes)

Presenter: ZHANG, Jinlong (ANL)

Session Classification: 9. IF Intro and LOIs

Contribution ID: **239** Type: **not specified**

CPAD Introduction

Tuesday, October 6, 2020 11:15 AM (20 minutes)

Presenter: HEEGER, Karsten (Yale University)

Session Classification: 9. IF Intro and LOIs

Contribution ID: **240**   Type: **not specified**

High-level Summary of IF LOIs

Tuesday, October 6, 2020 11:35 AM (25 minutes)

Presenter: BARBEAU, Phillip (Duke University)

Session Classification: 9. IF Intro and LOIs

Contribution ID: **241** Type: **not specified**

Session introduction

Tuesday, October 6, 2020 1:00 PM (2 minutes)

Primary frontier topic

Presenter: VAN TILBORG, Jeroen (LBNL)

Session Classification: 172. Near-term applications of plasma accelerators

Contribution ID: **242**   Type: **not specified**

Measurement of the pp cross section at \sqrt{s} ˜ 100 TeV

Wednesday, October 7, 2020 2:30 PM (5 minutes)

Presenter: RENO, Mary Hall (University of Iowa)

Session Classification: 138. Synergy of astro-particle physics and collider physics

Contribution ID: **243**   Type: **not specified**

Applications of quantum information to quantum gravity, black holes and QFT

Tuesday, October 6, 2020 1:00 PM (15 minutes)

Presenter: RANGAMANI, Mukund (UC Davis)

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **244**   Type: **not specified**

Entanglement, tensor networks and complexity

Tuesday, October 6, 2020 1:15 PM (15 minutes)

Presenter: SWINGLE, Brian (University of Maryland)

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **245** Type: **not specified**

Quantum Computing

Tuesday, October 6, 2020 1:30 PM (15 minutes)

Presenter: SAVAGE, Martin (INT)

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **246**   Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:00 PM (30 minutes)

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **247** Type: **not specified**

Panel 1: Detection Techniques

Wednesday, October 7, 2020 1:00 PM (30 minutes)

Panelists:

Olga Botner, Albrecht Karle, Abigail Vieregg, Angela Olinto, Stephanie Wissel

Session Classification: 137. High and ultrahigh energy neutrino experiments - #cpm_session_137

Contribution ID: **248** Type: **not specified**

Panel 2: Future Observations and Science Discoveries

Wednesday, October 7, 2020 1:30 PM (30 minutes)

Panelists:

Hallsie Reno, Carlos Arguelles, Mauricio Bustamante, Tonia Venters

Session Classification: 137. High and ultrahigh energy neutrino experiments - #cpm_session_137

Contribution ID: **249** Type: **not specified**

EF perspective

Tuesday, October 6, 2020 11:30 AM (10 minutes)

Presenter: TITOV, Maxim (CEA Saclay)

Session Classification: 130. Enabling technologies for low mass and ps timing detectors

Contribution ID: **250**
Type: **not specified**

RF perspective

Tuesday, October 6, 2020 11:40 AM (10 minutes)

Presenter: ARTUSO, Marina (syracuse university)

Session Classification: 130. Enabling technologies for low mass and ps timing detectors

Contribution ID: **251**   Type: **not specified**

Enabling technologies for picosecond timing detectors

Tuesday, October 6, 2020 11:50 AM (10 minutes)

Presenters: SEIDEN, Abraham (University of California, Santa Cruz); SEIDEN, Abraham (University of California at Santa Cruz)

Session Classification: 130. Enabling technologies for low mass and ps timing detectors

Contribution ID: **252**   Type: **not specified**

Enabling technologies for low mass trackers

Tuesday, October 6, 2020 12:00 PM (10 minutes)

Presenter: AFFOLDER, Tony (UCSC- SCIPP)

Session Classification: 130. Enabling technologies for low mass and ps timing detectors

Contribution ID: **253** Type: **not specified**

discussion and future plans

Tuesday, October 6, 2020 12:10 PM (20 minutes)

Session Classification: 130. Enabling technologies for low mass and ps timing detectors

Contribution ID: **254**   Type: **not specified**

Introduction

Tuesday, October 6, 2020 3:00 PM (5 minutes)

Presenter: MOCIOIU, Irina (Pennsylvania State University)

Session Classification: 97. Neutrinos as Probes of Standard and BSM Particle Physics

Contribution ID: **255**   Type: **not specified**

Hadron structure and spectroscopy brief

Tuesday, October 6, 2020 1:03 PM (7 minutes)

Presenter: LIN, Huey-Wen (MSU)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **256**   Type: **not specified**

Light and heavy flavor physics brief

Tuesday, October 6, 2020 1:10 PM (7 minutes)

Presenter: MEINEL, Stefan (University of Arizona)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **257**   Type: **not specified**

Fundamental Symmetries brief

Tuesday, October 6, 2020 1:17 PM (6 minutes)

Presenter: BHATTACHARYA, Tanmoy (Los Alamos National Laboratory)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **258** Type: **not specified**

v-Nucleus scattering brief

Tuesday, October 6, 2020 1:23 PM (6 minutes)

Presenter: WAGMAN, Michael (Fermilab)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **259** Type: **not specified**

BSM with LGT brief

Tuesday, October 6, 2020 1:29 PM (5 minutes)

Presenter: NEIL, Ethan (University of Colorado, Boulder)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **260**   Type: **not specified**

Computation and algorithm brief

Tuesday, October 6, 2020 1:34 PM (6 minutes)

Presenter: BOYLE, Peter (Brookhaven National Laboratory)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **261**   Type: **not specified**

Hamiltonian simulation and sign problem

Tuesday, October 6, 2020 1:40 PM (5 minutes)

Presenter: DAVOUDI, Zohreh (University of Maryland)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **262**   Type: **not specified**

Panel discussion

Tuesday, October 6, 2020 1:45 PM (45 minutes)

Discussions will be organized around the following questions:

1) What areas of the LGT program in general, and the topic you are representing in particular, require a comprehensive study to be conducted as part of the Snowmass process in order to quantify the impact of the LGT results on improving phenomenological constraints and the overall experimental programs. i.e., are there areas for which we need to go beyond the USQCD whitepapers and do a more thorough study?

2) What are the computational, algorithmic, and human resource requirements of the program to achieve the impact identified and quantified in the previous question? What is the best HPC model that facilitates scientific progress in our community? If we were to have an input in the development of the upcoming machines and technologies, what would we propose? What is the significance of new classical algorithms, and how can they be combined with developing paradigms based on Machine Learning and Quantum Computing to expedite our scientific output already in the next decade?

Presenters: KRONFELD, Andreas (Fermilab); HASENFRATZ, Anna (university of colorado boulder); DETAR, Carleton (University of Utah); JUNG, Chulwoo (Brookhaven National Laboratory); CHRIST, Norman (Columbia University); GUPTA, Rajan (Los Alamos National Lab); VAN DE WATER, Ruth (Fermilab); PRELOVSEK, Sasa (University of Ljubljana); IZUBUCHI, Taku (Brookhaven National Laboratory)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **263** Type: **not specified**

Introduction to the session

Tuesday, October 6, 2020 1:00 PM (3 minutes)

Presenter: DAVOUDI, Zohreh (University of Maryland)

Session Classification: 124. Lattice Gauge Theory for High Energy Physics

Contribution ID: **264** Type: **not specified**

Collider Data Analysis Strategies: Motivation and Ground Rules

Tuesday, October 6, 2020 2:30 PM (5 minutes)

Presenter: SUAREZ, Indara (Boston University)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **265** Type: **not specified**

Systematics-limited targets for measurements/searches

Tuesday, October 6, 2020 2:35 PM (5 minutes)

Presenter: BENDAVID, Josh (MIT)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **266** Type: **not specified**

Statistics-limited targets for measurements/searches

Tuesday, October 6, 2020 2:40 PM (5 minutes)

Presenter: BROST, Elizabeth (Brookhaven National Laboratory)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **267**   Type: **not specified**

Advances in triggering and data acquisition

Tuesday, October 6, 2020 2:45 PM (5 minutes)

Primary frontier topic

Presenter: NGADIUBA, Jennifer

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **268**   Type: **not specified**

Challenges and opportunities for trigger-level analyses

Tuesday, October 6, 2020 2:50 PM (5 minutes)

Presenter: BOVEIA, Antonio (Ohio State University)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **269**   Type: **not specified**

Object identification and event classification

Tuesday, October 6, 2020 2:55 PM (5 minutes)

Presenter: GOUSKOS, Loukas

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **270** Type: **not specified**

Differentiable programming

Tuesday, October 6, 2020 3:00 PM (5 minutes)

Presenter: FEICKERT, Matthew (Southern Methodist University)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **271**   Type: **not specified**

Challenges and opportunities for anomaly detection

Tuesday, October 6, 2020 3:05 PM (5 minutes)

Presenter: SHIH, David (Rutgers University)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **272**   Type: **not specified**

Interface of theory calculations with experimental methods

Tuesday, October 6, 2020 3:10 PM (5 minutes)

Presenter: MARZANI, Simone (Università di Genova & INFN Genova)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **273** Type: **not specified**

Data preservation and reinterpretation

Tuesday, October 6, 2020 3:15 PM (5 minutes)

Presenter: TRISOVIC, Ana

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **274**   Type: **not specified**

Collider Data Analysis Strategies: Open Discussion

Tuesday, October 6, 2020 3:20 PM (40 minutes)

Session Classification: 132. Collider Data Analysis Strategies

Contribution ID: **275**   Type: **not specified**

Theories for B and L Violation

Wednesday, October 7, 2020 1:00 PM (20 minutes)

Primary frontier topic

Presenter: BABU, K.S. (Oklahoma State University)

Session Classification: 110. Baryon and Lepton Number Violating processes

Contribution ID: **276**   Type: **not specified**

Neutrinoless double beta decay experiments

Wednesday, October 7, 2020 1:20 PM (10 minutes)

Presenter: GRUSZKO, Julieta

Session Classification: 110. Baryon and Lepton Number Violating processes

Contribution ID: **277**   Type: **not specified**

Proton Decay experiments

Wednesday, October 7, 2020 1:30 PM (10 minutes)

Primary frontier topic

Presenter: KEARNS, Edward (Boston University)

Session Classification: 110. Baryon and Lepton Number Violating processes

Contribution ID: **278** Type: **not specified**

n-nbar oscillation experiments

Wednesday, October 7, 2020 1:40 PM (10 minutes)

Presenter: BROUSSARD, Leah (Oak Ridge National Laboratory)

Session Classification: 110. Baryon and Lepton Number Violating processes

Contribution ID: **279**   Type: **not specified**

Discussion

Wednesday, October 7, 2020 1:50 PM (10 minutes)

Session Classification: 110. Baryon and Lepton Number Violating processes

Contribution ID: **280** Type: **not specified**

Advances in Event Generation and Detector Simulation: Motivation and Ground Rules

Wednesday, October 7, 2020 1:00 PM (5 minutes)

Presenter: THALER, Jesse (MIT)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **281**   Type: **not specified**

Computational challenges for event generation in view of HL-LHC and beyond

Wednesday, October 7, 2020 1:05 PM (5 minutes)

Presenter: MCFAYDEN, Joshua

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **282** Type: **not specified**

State-of-the-art event generators via new techniques and technologies

Wednesday, October 7, 2020 1:10 PM (5 minutes)

Presenter: BOTHMANN, Enrico

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **283**   Type: **not specified**

Event generators for NNLO/NLL and beyond

Wednesday, October 7, 2020 1:15 PM (5 minutes)

Presenter: ZANDERIGHI, Giulia

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **284**   Type: **not specified**

Electroweak effects and/or multi-boson processes

Wednesday, October 7, 2020 1:20 PM (5 minutes)

Presenter: PRESTEL, Stefan (Lund University)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **285**   Type: **not specified**

Machine learning for detector simulations

Wednesday, October 7, 2020 1:25 PM (5 minutes)

Presenter: PEDRO, Kevin (Fermilab)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **286**   Type: **not specified**

Systematic effects in detector simulations

Wednesday, October 7, 2020 1:30 PM (5 minutes)

Presenter: YARBA, Julia (FNAL)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **287**   Type: **not specified**

Physics opportunities in neutrino event generation

Wednesday, October 7, 2020 1:35 PM (5 minutes)

Primary frontier topic

Presenter: ROCCO, Noemi (Argonne National Laboratory - Fermilab)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **288**   Type: **not specified**

Computational challenges for neutrino event generators

Wednesday, October 7, 2020 1:40 PM (5 minutes)

Primary frontier topic

Presenter: GARDINER, Steven (Fermilab)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **289** Type: **not specified**

Leveraging new computational architectures and strategies

Wednesday, October 7, 2020 1:45 PM (5 minutes)

Presenter: LEGGETT, Charles (LBNL)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **290**   Type: **not specified**

Advances in Event Generation and Detector Simulation: Open Discussion

Wednesday, October 7, 2020 1:50 PM (40 minutes)

Session Classification: 99. Advances in Event Generation and Detector Simulation

Contribution ID: **291**   Type: **not specified**

New frontiers in the PDF analysis in the HL-LHC era

Tuesday, October 6, 2020 11:45 AM (15 minutes)

Primary frontier topic

Presenter: UBIALI, Maria (University of Cambridge)

Session Classification: 92. Non-perturbative QCD dynamics at colliders

Contribution ID: **292** Type: **not specified**

Introduction: EF05/06 Letters of Interest on nonperturbative effects in high-precision QCD predictions

Tuesday, October 6, 2020 11:30 AM (10 minutes)

We introduce Letters of Interest submitted to the EF05 and EF06 topical groups and dedicated to the treatment of nonperturbative effects in high-precision QCD computations and parton showering programs.

Primary frontier topic

Presenters: HOECHE, Stefan (Fermilab); NADOLSKY, Pavel (Southern Methodist University)

Session Classification: 92. Non-perturbative QCD dynamics at colliders

Contribution ID: **293**   Type: **not specified**

QCD at the Forward Physics Facility at CERN

Tuesday, October 6, 2020 12:15 PM (15 minutes)

Primary frontier topic

Presenter: GARZELLI, Maria Vittoria (Hamburg Universitaet)

Session Classification: 92. Non-perturbative QCD dynamics at colliders

Contribution ID: **294**   Type: **not specified**

Precision PDF at the Electron-Ion Collider

Tuesday, October 6, 2020 12:30 PM (15 minutes)

Primary frontier topic

Presenter: HOBBS, Timothy (CTEQ at SMU)

Session Classification: 92. Non-perturbative QCD dynamics at colliders

Contribution ID: **295**   Type: **not specified**

Muon Lifetime Enhancement

Wednesday, October 7, 2020 1:45 PM (5 minutes)

Presenter: CAMERON, Peter (Brookhaven National Lab (retired))

Session Classification: 44. New accelerator concepts for high intensity muon beams

Contribution ID: **296**   Type: **not specified**

AF5 Overview and Plans

Tuesday, October 6, 2020 1:30 PM (5 minutes)

Presenter: PREBYS, Eric (UC Davis)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **297**   Type: **not specified**

Magnet R&D for Low-Mass Axion Searches

Tuesday, October 6, 2020 1:35 PM (4 minutes)

Presenter: LEDER, Alexander (MIT)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **298** Type: **not specified**

LANSCE-PSR Short-Pulse Upgrade for Improved Dark Matter and Sterile Neutrino Searches

Tuesday, October 6, 2020 1:39 PM (4 minutes)

Presenter: VAN DE WATER, Richard (LANL)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **299** Type: **not specified**

Belle II/SuperKEKB Upgrades & Overview

Tuesday, October 6, 2020 1:43 PM (4 minutes)

Presenter: BROWDER, Thomas (University of Hawaii)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **300**   Type: **not specified**

Beamdump Experiments Driven by a Plasma Wake-field Accelerator

Tuesday, October 6, 2020 1:47 PM (4 minutes)

Presenter: GESSNER, Spencer (SLAC)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **301**   Type: **not specified**

Fixed-Target Searches for New Physics with O(1 GeV) Proton Beams at Fermi National Accelerator Laboratory [+O(10 GeV) LoI)]

Tuesday, October 6, 2020 1:51 PM (4 minutes)

Presenter: TOUPS, Matthew (FNAL)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **302** Type: **not specified**

Storage Rings for the Search of Charged-Particle Electric Dipole Moments

Tuesday, October 6, 2020 1:55 PM (4 minutes)

Presenter: Prof. LENISA, Paolo (University of Ferrara and INFN - Italy)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **303**   Type: **not specified**

Neutrino Minimal Standard Model - a unified theory of microscopic and cosmic scales

Tuesday, October 6, 2020 1:59 PM (4 minutes)

Presenter: TIMIRYASOV, Inar

Session Classification: 173. AF5 organization with contributors

Contribution ID: **304**   Type: **not specified**

Transduction for New Regimes in Quantum Sensing

Tuesday, October 6, 2020 2:03 PM (4 minutes)

Presenter: NANNI, Emilio (SLAC National Accelerator Laboratory)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **305** Type: **not specified**

Precision Electroweak Physics with Polarized Beams at SuperKEKB/Belle II

Tuesday, October 6, 2020 2:07 PM (4 minutes)

Presenter: RONEY, John Michael (University of Victoria)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **306**   Type: **not specified**

The International Axion Observatory (IAXO) and BabyIAXO

Tuesday, October 6, 2020 2:11 PM (4 minutes)

Primary frontier topic

Presenter: RUZ, Jaime (LLNL)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **307** Type: **not specified**

Development and applications of a Compton X-ray light source driven by a laser-plasma electron accelerator

Tuesday, October 6, 2020 1:02 PM (7 minutes)

Presenter: UMSTADTER, Donald (University of Nebraska-Lincoln)

Session Classification: 172. Near-term applications of plasma accelerators

Contribution ID: **308** Type: **not specified**

Applications of plasma-based betatron radiation

Tuesday, October 6, 2020 1:09 PM (7 minutes)

Presenter: HUSSEIN, Amina (University of Alberta)

Session Classification: 172. Near-term applications of plasma accelerators

Contribution ID: **309**   Type: **not specified**

Applications of laser-accelerated protons and ions

Tuesday, October 6, 2020 1:16 PM (7 minutes)

Presenter: OBST-HUEBL, Lieselotte (Lawrence Berkeley National Laboratory)

Session Classification: 172. Near-term applications of plasma accelerators

Contribution ID: **310**   Type: **not specified**

Applications emerging from unique plasma-enabled electron beam regimes

Tuesday, October 6, 2020 1:23 PM (7 minutes)

Presenter: HIDDING, Bernhard (University of Strathclyde)

Session Classification: 172. Near-term applications of plasma accelerators

Contribution ID: **311** Type: **not specified**

Overview of Facilities

Tuesday, October 6, 2020 2:15 PM (5 minutes)

Presenter: LAMONT, Mike (CERN)

Session Classification: 173. AF5 organization with contributors

Contribution ID: **312** Type: **not specified**

Introduction

Wednesday, October 7, 2020 11:00 AM (5 minutes)

Presenter: QUINN, Breese (University of Mississippi)

Session Classification: Plenary

Contribution ID: **313**   Type: **not specified**

Structural changes in support of public engagement with science in South Africa

Wednesday, October 7, 2020 11:05 AM (10 minutes)

Primary frontier topic

Presenter: Prof. MURONGA, Azwinndini (Nelson Mandela University)

Session Classification: Plenary

Contribution ID: **314**   Type: **not specified**

AF2 Plans and Discussion

Tuesday, October 6, 2020 11:30 AM (30 minutes)

Primary author: GALAMBOS, John

Co-authors: ZWASKA, Bob (Fermilab);   ARDUINI, Gianluigi (CERN)

Presenter: GALAMBOS, John

Session Classification: 171. AF2 organization with contributors

Contribution ID: **315**   Type: **not specified**

Need and prospects for improved parton shower Monte Carlos

Wednesday, October 7, 2020 1:00 PM (18 minutes)

Presenter: KRAUSS, Frank (IPPP Durham)

Session Classification: 28. Theory Challenges in Precision Measurements

Contribution ID: **316**   Type: **not specified**

Precision calculations for EW/Higgs precision physics at lepton colliders

Wednesday, October 7, 2020 1:18 PM (18 minutes)

Presenter: REUTER, Juergen (DESY)

Session Classification: 28. Theory Challenges in Precision Measurements

Contribution ID: **317**   Type: **not specified**

What do we need from theory?

Wednesday, October 7, 2020 1:36 PM (18 minutes)

Presenter: HUSTON, Joey (Michigan State University)

Session Classification: 28. Theory Challenges in Precision Measurements

Contribution ID: **318**   Type: **not specified**

Lattice QCD's role in precision measurements

Wednesday, October 7, 2020 1:54 PM (18 minutes)

Presenter: VAN DE WATER, Ruth (Fermilab)

Session Classification: 28. Theory Challenges in Precision Measurements

Contribution ID: **319**
Type: **not specified**

Theory challenges in heavy flavor decays

Wednesday, October 7, 2020 2:12 PM (18 minutes)

Presenter: GRINSTEIN, Benjamin (UCSD)

Session Classification: 28. Theory Challenges in Precision Measurements

Contribution ID: **320** Type: **not specified**

AF5 Overview and Plans

Wednesday, October 7, 2020 2:00 PM (15 minutes)

Primary frontier topic

Presenters: PREBYS, Eric (UC Davis); LAMONT, Mike (CERN); Prof. MILNER, Richard (MIT)

Session Classification: 185. High power proton beams for rare searches

Contribution ID: **321** Type: **not specified**

AF2 Plans and Discussion

Wednesday, October 7, 2020 2:15 PM (15 minutes)

Presenters: ZWASKA, Bob (Fermilab); ARDUINI, Gianluigi (CERN); GALAMBOS, John

Session Classification: 185. High power proton beams for rare searches

Contribution ID: **322** Type: **not specified**

NF09 Plans and Discussion

Tuesday, October 6, 2020 1:00 PM (40 minutes)

Presenters: MARINO, Alysia (University of Colorado); OCHOA, J. Pedro (University of California at Irvine); SPITZ, Joshua (University of Michigan); FIELDS, Laura (Fermilab)

Session Classification: 61. Energy and Power and Time structure goals for Neutrino Frontier programs

Contribution ID: **323** Type: **not specified**

AF5 Plans and Discussion

Tuesday, October 6, 2020 1:40 PM (25 minutes)

Presenters: BARBIER, Charlotte (ORNL); PELLEMOINE, Frederique (Fermilab -AD - TSD - TRD); SUN, Yine (Argonne National Lab.)

Session Classification: 61. Energy and Power and Time structure goals for Neutrino Frontier programs

Contribution ID: **324**   Type: **not specified**

AF2 Plans and Discussion

Tuesday, October 6, 2020 2:05 PM (25 minutes)

Presenters: ZWASKA, Bob (Fermilab); ARDUINI, Gianluigi (CERN); GALAMBOS, John

Session Classification: 61. Energy and Power and Time structure goals for Neutrino Frontier programs

Contribution ID: **325**   Type: **not specified**

Underground Facility Needs of Geology/Geological Engineering

Tuesday, October 6, 2020 1:00 PM (10 minutes)

Presenter: ROGGENTHEN, Bill (SDSMT)

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: **326**   Type: **not specified**

Underground Facility Needs of Biology

Tuesday, October 6, 2020 1:10 PM (10 minutes)

Presenter: Prof. KRUMHOLZ, Lee (University of Oklahoma)

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: **327**   Type: **not specified**

Grand challenges

Presenters: Dr NAGAITSEV, Sergei (FNAL); Dr HUANG, Zhirong (SLAC)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **328**   Type: **not specified**

Standard Siren Cosmology

Tuesday, October 6, 2020 12:45 PM (10 minutes)

Presenter: CHEN, Hsin-Yu (University of Chicago)

Session Classification: 139. Testing LambdaCDM cosmology at low and high redshifts

Contribution ID: **329** Type: **not specified**

Introduction

Wednesday, October 7, 2020 1:00 PM (5 minutes)

Plans for the session

Presenter: DENISOV, Dmitri (Fermilab)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **330**   Type: **not specified**

Hadron and lepton-hadron colliders with energies above 3 TeV

Wednesday, October 7, 2020 1:05 PM (17 minutes)

Primary frontier topic

Presenter: ZIMMERMANN, Frank (CERN)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **331**   Type: **not specified**

Physics potential of hadron and hadron-lepton colliders with energies above 3 TeV

Wednesday, October 7, 2020 1:22 PM (20 minutes)

Primary frontier topic

Presenter: WANG, Liantao (University of Chicago)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **332**   Type: **not specified**

Lepton and gg colliders with energies above 3 TeV

Wednesday, October 7, 2020 1:42 PM (18 minutes)

Primary frontier topic

Presenter: SCHULTE, Daniel (CERN)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **333**
Type: **not specified**

Physics potential of lepton and gg colliders with energies above 3 TeV

Wednesday, October 7, 2020 2:00 PM (20 minutes)

Primary frontier topic

Presenter: MEADE, Patrick (Stony Brook University)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **334**   Type: **not specified**

Summary and plans for 2021 Snowmass meeting

Wednesday, October 7, 2020 2:20 PM (10 minutes)

Primary frontier topic

Presenter: NARAIN, Meenakshi (Brown University)

Session Classification: 26. Energy Frontier discovery machines

Contribution ID: **335**   Type: **not specified**

Additional Time In Session

Tuesday, October 6, 2020 1:10 PM (20 minutes)

Session Classification: 109. Determining the Masses and Nature of Neutrinos

Contribution ID: **336**   Type: **not specified**

Additional Time In Session

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **337** Type: **not specified**

LOI Discussion

Tuesday, October 6, 2020 1:30 PM (30 minutes)

Session Classification: 147. Novel Ideas in Astronomical Observations

Contribution ID: **338** Type: **not specified**

Additional Time In Session

Tuesday, October 6, 2020 12:00 PM (30 minutes)

Session Classification: 171. AF2 organization with contributors

Contribution ID: **339** Type: **not specified**

Goal of the session

Tuesday, October 6, 2020 1:30 PM (5 minutes)

Session Classification: 54. Machine Detector Interface for Future Colliders

Contribution ID: **340**   Type: **not specified**

Discussion of Underground Facilities and Needs

Tuesday, October 6, 2020 1:50 PM (40 minutes)

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: **341** Type: **not specified**

ILC MDI

Tuesday, October 6, 2020 1:35 PM (15 minutes)

Presenter: MARKIEWICZ, Thomas (SLAC)

Session Classification: 54. Machine Detector Interface for Future Colliders

Contribution ID: **342**   Type: **not specified**

Muon Collider MDI

Tuesday, October 6, 2020 1:50 PM (15 minutes)

Presenter: MOKHOV, Nikolai (Fermilab)

Session Classification: 54. Machine Detector Interface for Future Colliders

Contribution ID: **343** Type: **not specified**

FCC MDI

Tuesday, October 6, 2020 2:05 PM (15 minutes)

Presenter: BOSCOLO, Manuela (INFN)

Session Classification: 54. Machine Detector Interface for Future Colliders

Contribution ID: **344**   Type: **not specified**

Discussion and plan

Tuesday, October 6, 2020 2:20 PM (10 minutes)

Session Classification: 54. Machine Detector Interface for Future Colliders

Contribution ID: **345**   Type: **not specified**

From scattering amplitudes to relativistic two-body problem

Tuesday, October 6, 2020 3:30 PM (10 minutes)

Primary frontier topic

Presenter: Prof. BUONANNO, Alessandra (Albert Einstein Institute, Max-Planck Institute for Gravitational Physics, Potsdam, Germany and University of Maryland)

Session Classification: 141. Gravitational wave source modelling

Contribution ID: **346**   Type: **not specified**

Field theory approach to the two-body problem

Tuesday, October 6, 2020 3:40 PM (10 minutes)

Primary frontier topic

Presenter: Prof. GOLDBERGER, Walter (Yale University)

Session Classification: 141. Gravitational wave source modelling

Contribution ID: **347** Type: **not specified**

Discussion session

Tuesday, October 6, 2020 3:50 PM (10 minutes)

Session Classification: 141. Gravitational wave source modelling

Contribution ID: **348**   Type: **not specified**

SRF for Linear Collider Higgs Factories

Tuesday, October 6, 2020 1:00 PM (5 minutes)

Presenters: UMEMORI, Kensei (KEK);   POSEN, Sam (Fermilab)

Session Classification: 180. SRF and magnets for Higgs factories

Contribution ID: **349** Type: **not specified**

SRF for FCCee

Tuesday, October 6, 2020 1:05 PM (5 minutes)

Presenter: GERIGK, Frank (Cern)

Session Classification: 180. SRF and magnets for Higgs factories

Contribution ID: **350**   Type: **not specified**

Compact binaries as probes of dense matter and QCD phase transitions

Tuesday, October 6, 2020 11:30 AM (6 minutes)

Presenter: Dr LANDRY, Philippe (Calstate Fullerton)

Session Classification: 145. QCD phase transitions and ultra-high density matter

Contribution ID: **351**   Type: **not specified**

Probing nuclear astrophysics and gravitation with neutron stars

Tuesday, October 6, 2020 11:36 AM (6 minutes)

Presenter: Dr FONSECA, Emmanuel

Session Classification: 145. QCD phase transitions and ultra-high density matter

Contribution ID: **352**   Type: **not specified**

Discovering quark-matter cores in massive neutron stars

Tuesday, October 6, 2020 11:42 AM (6 minutes)

Presenter: Dr KURKELA, Aleksi

Session Classification: 145. QCD phase transitions and ultra-high density matter

Contribution ID: **353** Type: **not specified**

Discussion session

Tuesday, October 6, 2020 11:48 AM (12 minutes)

Presenter: NORONHA-HOSTLER, Jacquelyn (Rutgers University)

Session Classification: 145. QCD phase transitions and ultra-high density matter

Contribution ID: **354**   Type: **not specified**

Introduction to Superconducting Undulators

Tuesday, October 6, 2020 1:10 PM (10 minutes)

Presenter: BOFFO, Cristian (Fermilab)

Session Classification: 180. SRF and magnets for Higgs factories

Contribution ID: 355   Type: **not specified**

Underground Facility Needs of Quantum Information Science

Tuesday, October 6, 2020 1:20 PM (10 minutes)

Presenter: PERDUE, Gabriel (Fermilab)

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: 356   Type: **not specified**

Underground Facility Needs of other Gravity Experiments

Tuesday, October 6, 2020 1:40 PM (10 minutes)

Presenter: KOVACHY, Tim Kovachy (Northwestern University)

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: 357   Type: **not specified**

Particle Physics with Quantum Sensors

Tuesday, October 6, 2020 1:45 PM (15 minutes)

Presenter: RAJENDRAN, Surjeet

Session Classification: 102. The Roles of QIS in HEP

Contribution ID: **358**   Type: **not specified**

Advanced SRF R&D for Higgs Factory Luminosity (and Energy) Upgrades

Tuesday, October 6, 2020 1:20 PM (10 minutes)

Presenter: PADAMSEE, Hasan (Cornell/Fermilab)

Session Classification: 180. SRF and magnets for Higgs factories

Contribution ID: **359**   Type: **not specified**

Computing roadmap overview

Wednesday, October 7, 2020 12:45 PM (10 minutes)

Survey of DOE HPC roadmap and programming models

Presenter: BOYLE, Peter (Brookhaven National Laboratory)

Session Classification: 84. Computing Requirements & Opportunities in Theory

Contribution ID: **360**   Type: **not specified**

Summary of needs in lattice

Wednesday, October 7, 2020 12:55 PM (10 minutes)

Presenter: BROWER, Richard C. (Boston University)

Session Classification: 84. Computing Requirements & Opportunities in Theory

Contribution ID: **361**   Type: **not specified**

Summary of needs in Conformal Bootstrap

Wednesday, October 7, 2020 1:05 PM (10 minutes)

Presenter: SIMMONS-DUFFIN, David (Caltech)

Session Classification: 84. Computing Requirements & Opportunities in Theory

Contribution ID: **362**   Type: **not specified**

Summary of needs in Perturbative Amplitudes

Wednesday, October 7, 2020 1:15 PM (10 minutes)

Presenter: FEBRES CORDERO, Fernando (FSU)

Session Classification: 84. Computing Requirements & Opportunities in Theory

Contribution ID: **363**
Type: **not specified**

Discussion and Next Steps

Wednesday, October 7, 2020 1:25 PM (20 minutes)

Session Classification: 84. Computing Requirements & Opportunities in Theory

Contribution ID: **364**   Type: **not specified**

AIFI: Bridging Artificial Intelligence and Fundamental Interactions

Tuesday, October 6, 2020 2:30 PM (20 minutes)

Presenter: HARRIS, Philip (MIT)

Session Classification: 80. Computing Requirements & Opportunities for the Energy Frontier

Contribution ID: **365** Type: **not specified**

Programmable Storage

Tuesday, October 6, 2020 2:50 PM (20 minutes)

Presenter: MALTZAHN, Carlos (UCSC)

Session Classification: 80. Computing Requirements & Opportunities for the Energy Frontier

Contribution ID: **366** Type: **not specified**

Welcome and overview of LoIs in 176 (A10)

Tuesday, October 6, 2020 1:00 PM (1 minute)

Presenter: BAI, Mei (GSI)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **367** Type: **not specified**

Grand challenges

Tuesday, October 6, 2020 1:01 PM (7 minutes)

Presenter: NAGAITSEV, Sergei (FNAL)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **368**   Type: **not specified**

Advanced beam cooling

Tuesday, October 6, 2020 1:08 PM (5 minutes)

Presenter: STUPAKOV, Gennady (SLAC)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **369**   Type: **not specified**

Accelerator technology development at Russia

Tuesday, October 6, 2020 1:13 PM (5 minutes)

Presenter: Dr TRUBNIKOV, Grigory (JINR)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **370**   Type: **not specified**

Joint discussion

Tuesday, October 6, 2020 1:18 PM (14 minutes)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **371** Type: **not specified**

Overview of future multi-TeV collider LoIs

Tuesday, October 6, 2020 1:32 PM (6 minutes)

Presenter: PALMER, Mark (Brookhaven National Laboratory)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **372** Type: **not specified**

Challenges of ultimate high energy colliders

Tuesday, October 6, 2020 1:38 PM (10 minutes)

Presenter: ZIMMERMANN, Frank (CERN)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **373** Type: **not specified**

Joint discussion

Tuesday, October 6, 2020 1:48 PM (14 minutes)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **374**   Type: **not specified**

advanced acceleration concepts: PWA

Tuesday, October 6, 2020 2:02 PM (5 minutes)

Presenters: Dr BENEDETTI , Carlo (LBL);   Dr ESAREY, Eric (LBL)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **375** Type: **not specified**

advanced acceleration concepts: SWA

Tuesday, October 6, 2020 2:07 PM (5 minutes)

Presenter: PIOT, Philippe (Northern Illinois University &amp;amp; Fermilab)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **376**   Type: **not specified**

Advanced acceleration concepts: DLA

Tuesday, October 6, 2020 2:12 PM (5 minutes)

Presenter: Dr TORRISI, Giuseppe (INFN)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **377** Type: **not specified**

Joint discussion

Tuesday, October 6, 2020 2:17 PM (23 minutes)

Session Classification: 176. Grand challenges of ultimate beams and ultimate high energy colliders

Contribution ID: **378**   Type: **not specified**

Nonperturbative aspects of the measurements of the QCD coupling

Tuesday, October 6, 2020 12:00 PM (15 minutes)

Presenter: HUSTON, Joey (Michigan State University)

Session Classification: 92. Non-perturbative QCD dynamics at colliders

Contribution ID: **379** Type: **not specified**

Underground Facility Needs of Laser-Interferometry Gravity Experiments

Tuesday, October 6, 2020 1:30 PM (10 minutes)

Primary frontier topic

Presenter: VAN DEN BRAND, Jo

Session Classification: 122. Capabilities needed to execute underground experiments in a broad range of research categories

Contribution ID: **380** Type: **not specified**

126: Flavor Physics

Tuesday, October 6, 2020 1:00 PM (30 minutes)

Primary frontier topic

Presenters: ZUPAN, Jure (U. Cincinnati); DEMERS, Sarah (Yale)

Session Classification: 126. BSM: direct and indirect searches

Contribution ID: **381** Type: **not specified**

126: Naturalness and EWSB

Tuesday, October 6, 2020 1:30 PM (30 minutes)

Primary frontier topic

Presenters: REECE, Matthew (Harvard University); CAVALIERE, Viviana (Brookhaven National Lab)

Session Classification: 126. BSM: direct and indirect searches

Contribution ID: **382** Type: **not specified**

126: EFT vs. Top-Down

Tuesday, October 6, 2020 2:00 PM (30 minutes)

Primary frontier topic

Presenters: HAYDEN, Daniel (Michigan State University); BRIVIO, Ilaria

Session Classification: 126. BSM: direct and indirect searches

Contribution ID: **383**   Type: **not specified**

Targets and Sources Plan Presentations

Tuesday, October 6, 2020 11:30 AM (20 minutes)

Session Classification: 179. AF7_Targets and Sources organization with contributors

Contribution ID: **384** Type: **not specified**

Targets and Sources Plan discussion

Tuesday, October 6, 2020 11:50 AM (40 minutes)

Session Classification: 179. AF7_Targets and Sources organization with contributors

Contribution ID: **385**   Type: **not specified**

Targets and Sources Plan Presentations

Wednesday, October 7, 2020 1:00 PM (20 minutes)

Session Classification: 184. Sources and targets for future accelerators

Contribution ID: **386**   Type: **not specified**

Targets and Sources Plan Discussion

Wednesday, October 7, 2020 1:20 PM (40 minutes)

Session Classification: 184. Sources and targets for future accelerators

Contribution ID: **387**   Type: **not specified**

Connection with industry - accelerators

Wednesday, October 7, 2020 2:00 PM (30 minutes)

This session invites speakers from industry to present their experience in terms of working with national laboratories and academia, what the strengths in the partnership are, and where improvements can be made. The session is split into two sections, one on accelerator technologies and one on semiconductors.

First section: Flash talks and discussion with Manoj Kanskar (nLIGHT), Antoine Courjaud (Amplitude Laser), Salime Boucher (RadiaBeam), and Alexei Kanareykin (Euclid).

Primary frontier topic

Session Classification: 57. Connection with industry

Contribution ID: **388** Type: **not specified**

Connection with industry - semiconductors

Wednesday, October 7, 2020 2:30 PM (30 minutes)

This session invites speakers from industry to present their experience in terms of working with national laboratories and academia, what the strengths in the partnership are, and where improvements can be made. The session is split into two sections, one on accelerator technologies and one on semiconductors.

Second section: Flash talks and panel discussion with Bob Patti (NHanced Semiconductors), Brian Tyrell (MITLL), Farah Fahim (FNAL), and Garbriella Carini (BNL).

Primary frontier topic

Session Classification: 57. Connection with industry

Contribution ID: **389**   Type: **not specified**

Considerations on plasma lenses for linear colliders

Wednesday, October 7, 2020 1:30 PM (20 minutes)

Primary frontier topic

Presenter: GESSNER, Spencer (SLAC)

Session Classification: 187. Machine Detector Interface with plasma lens and plasma accelerators

Contribution ID: **390**   Type: **not specified**

Food for thought & discussion

Wednesday, October 7, 2020 1:50 PM (10 minutes)

Primary frontier topic

Session Classification: 187. Machine Detector Interface with plasma lens and plasma accelerators

Contribution ID: **391**   Type: **not specified**

First HEP applications of plasma wakefield acceleration

Wednesday, October 7, 2020 2:00 PM (15 minutes)

Primary frontier topic

Presenter: Prof. WING, Matthew (University College London)

Session Classification: 188. Plasma Acceleration for fixed target experiments

Contribution ID: **392**   Type: **not specified**

Energy and power limits of plasma accelerators

Tuesday, October 6, 2020 2:00 PM (15 minutes)

Presenter: SCHROEDER, Carl (Lawrence Berkeley National Laboratory)

Session Classification: 182. Energy and power limits for plasma accelerators

Contribution ID: **393** Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:15 PM (15 minutes)

A overview presentation will be followed by community discussion on potential energy reach of plasma based colliders at scales to and beyond 10 TeV. Comments from the community, both based on LOI's discssed at the AF6 September worskhop (https://indico.fnal.gov/event/45651/) and new comments, are encouraged.

This session will be in addition to a more general session, A10 Physics limits of Ultimate Beams (colliders: e+/e-, mu/mu, p/p, p drivers, etc) which will address overall considerations. As such, A26 will be aimed at specific plasma based collider issues.

Energy reach considerations include scattering, hosing, radiation, focusing and interaction point physics. Efficiency considerations include structure efficiency, interaction point geometry to maximize interaction, and energy recovery. The extent to which plasma based concepts (both established and new) may have properties that either improve on conventional machines or present limits will be discussed. The goal is outline the status of issues that have been analyzed and discuss needs for further research that should be addressed to move forward collider designs based on these concepts.

Session Classification: 182. Energy and power limits for plasma accelerators

Contribution ID: **394**   Type: **not specified**

Introduction: Accelerator Frontier 1: Beam Physics, Accelerator Education, Outreach & Diversity

Wednesday, October 7, 2020 1:15 PM (5 minutes)

Presenter: LUND, Steve

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **395** Type: **not specified**

AF1 - Training & Education - Barletta (MIT), Recruitment & Retention - Fox (Stanford)

Wednesday, October 7, 2020 1:20 PM (9 minutes)

Presenters: FOX, John (Stanford University); BARLETTA, William (MIT)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **396** Type: **not specified**

AF1 - Workforce & Diversity - Bai (GSI/U. Bonn) , Facility Summaries - Zimmermann (CERN) , Outreach with Industry - Bruhwiler (RadiaSoft)

Wednesday, October 7, 2020 1:30 PM (9 minutes)

Presenters: BRUHWILER, David (RadiaSoft LLC); ZIMMERMANN, Frank (CERN); BAI, Mei (GSI)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: 397   Type: **not specified**

HEP - Workforce, Training and Education (CEF)

Wednesday, October 7, 2020 1:00 PM (15 minutes)

Primary frontier topic

Presenter: MALIK, Sudhir (University of Puerto Rico Mayaguez)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: 398   Type: **not specified**

HEP - Career Pipeline & Development (CommF2)

Wednesday, October 7, 2020 1:39 PM (5 minutes)

Primary frontier topic

Presenters: HOGAN, Julie (Bethel University);   HOGAN, Julie (Bethel University)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **399** Type: **not specified**

HEP - Education (CommF4)

Wednesday, October 7, 2020 1:44 PM (5 minutes)

Presenter: Prof. RUCHTI, Randy (University of Notre Dame)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **400**   Type: **not specified**

Early Career Perspective

Wednesday, October 7, 2020 1:49 PM (5 minutes)

Presenter: VELAN, Vetri (University of California, Berkeley)

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **401**   Type: **not specified**

Discussion/ Next Steps (slack channel #cpm_topic_119)

Wednesday, October 7, 2020 1:54 PM (36 minutes)

Primary frontier topic

Session Classification: 119. HEP and Accelerator Workforce, Careers, and Training

Contribution ID: **402**   Type: **not specified**

Staging Aspects for FCC

Tuesday, October 6, 2020 3:30 PM (5 minutes)

Presenter: BENEDIKT, Michael (CERN)

Session Classification: 178. Common accelerator goals/technology at the energy frontier

Contribution ID: **403**   Type: **not specified**

CEPC-SPPC Staging

Tuesday, October 6, 2020 3:35 PM (5 minutes)

Primary frontier topic

Presenter: GAO, Jie (IHEP)

Session Classification: 178. Common accelerator goals/technology at the energy frontier

Contribution ID: **404** Type: **not specified**

ERL–Based Circular Higgs Factory

Tuesday, October 6, 2020 3:40 PM (5 minutes)

Primary frontier topic

Presenter: ROSER, Thomas (BNL)

Session Classification: 178. Common accelerator goals/technology at the energy frontier

Contribution ID: **408**   Type: **not specified**

Higher Gradient Expectations for SRF for ILC Energy Upgrades

Tuesday, October 6, 2020 3:45 PM (5 minutes)

Primary frontier topic

Co-author: PADAMSEE, Hasan (Fermi National Accelerator Lab)

Presenter: PADAMSEE, Hasan (Fermi National Accelerator Lab)

Session Classification: 178. Common accelerator goals/technology at the energy frontier

Contribution ID: **409**   Type: **not specified**

Staging of Muon Collider

Tuesday, October 6, 2020 3:50 PM (5 minutes)

Presenter: PALMER, Mark (Brookhaven National Laboratory)

Session Classification: 178. Common accelerator goals/technology at the energy frontier

Contribution ID: **410** Type: **not specified**

Intro

Tuesday, October 6, 2020 1:30 PM (5 minutes)

Jim Beatty, Ke Fang, Kirsten Tollefson

Session Classification: 140. Future medium to ultrahigh energy gamma-ray detectors - #cpm_session_140

Contribution ID: **411**   Type: **not specified**

Panel on MeV to EeV Gamma-ray Detectors

Tuesday, October 6, 2020 1:35 PM (25 minutes)

Panelists are Carolyn Kierans, Tom Shutt, Jamie Holder, Andrea Albert, Marcus Niechciol

Session Classification: 140. Future medium to ultrahigh energy gamma-ray detectors - #cpm_session_140

Contribution ID: **412** Type: **not specified**

Discussion

Tuesday, October 6, 2020 2:00 PM (25 minutes)

Input from community

Session Classification: 140. Future medium to ultrahigh energy gamma-ray detectors - #cpm_session_140

Contribution ID: **413** Type: **not specified**

Summary

Tuesday, October 6, 2020 2:25 PM (5 minutes)

Summarize the discussion

Session Classification: 140. Future medium to ultrahigh energy gamma-ray detectors - #cpm_session_140

Contribution ID: **414** Type: **not specified**

Introduction

Tuesday, October 6, 2020 1:00 PM (15 minutes)

Session Classification: 74. Atomic to Cosmic: Wave Dark Matter and Beyond

Contribution ID: **415**   Type: **not specified**

Breakout Discussion

Tuesday, October 6, 2020 1:15 PM (30 minutes)

Session Classification: 74. Atomic to Cosmic: Wave Dark Matter and Beyond

Contribution ID: **416** Type: **not specified**

Breakout Report

Tuesday, October 6, 2020 1:45 PM (30 minutes)

Session Classification: 74. Atomic to Cosmic: Wave Dark Matter and Beyond

Contribution ID: **417**

Type: **not specified**

Summary Discussion

Tuesday, October 6, 2020 2:15 PM (15 minutes)

Session Classification: 74. Atomic to Cosmic: Wave Dark Matter and Beyond

Contribution ID: **418** Type: **not specified**

Session Intro

Tuesday, October 6, 2020 3:00 PM (5 minutes)

Presenters: NEWBY, Jason (Oak Ridge National Laboratory); WINTER, Peter (Argonne National Laboratory)

Session Classification: 29. Low-energy precision experiments

Contribution ID: **419** Type: **not specified**

Open discussion

Tuesday, October 6, 2020 3:05 PM (50 minutes)

Session Classification: 29. Low-energy precision experiments

Contribution ID: **420**   Type: **not specified**

Closeout

Tuesday, October 6, 2020 3:55 PM (5 minutes)

Session Classification: 29. Low-energy precision experiments

Contribution ID: **421** Type: **not specified**

EF and RF Points (#26, #130 ,#131)

Wednesday, October 7, 2020 3:00 PM (5 minutes)

Session Classification: 209. IF Planning

Contribution ID: **422** Type: **not specified**

NF Points (#51)

Wednesday, October 7, 2020 3:05 PM (5 minutes)

Presenter: SANCHEZ, Mayly (Iowa State University)

Session Classification: 209. IF Planning

Contribution ID: **423** Type: **not specified**

CF Points (#69, #70, #71, #74, #137, #140)

Wednesday, October 7, 2020 3:10 PM (5 minutes)

Session Classification: 209. IF Planning

Contribution ID: **424** Type: **not specified**

AF Points (#54, #187)

Wednesday, October 7, 2020 3:20 PM (5 minutes)

Session Classification: 209. IF Planning

Contribution ID: **425** Type: **not specified**

UF Points (#122)

Wednesday, October 7, 2020 3:25 PM (5 minutes)

Session Classification: 209. IF Planning

Contribution ID: **426** Type: **not specified**

CompF Points (#123)

Wednesday, October 7, 2020 3:30 PM (5 minutes)

Session Classification: 209. IF Planning

Contribution ID: **427** Type: **not specified**

CommF and EC Points (#57, #118, #119)

Wednesday, October 7, 2020 3:35 PM (5 minutes)

Primary frontier topic

Presenter: DUNNE, Katherine (Stockholm University)

Session Classification: 209. IF Planning

Contribution ID: **428** Type: **not specified**

QIS Points (#77, #102)

Wednesday, October 7, 2020 3:15 PM (5 minutes)

Primary frontier topic

Presenter: IRWIN, Kent (Stanford University and SLAC)

Session Classification: 209. IF Planning

Contribution ID: **429**   Type: **not specified**

Discussion

Wednesday, October 7, 2020 3:40 PM (20 minutes)

Session Classification: 209. IF Planning

Contribution ID: **430** Type: **not specified**

108: Accelerator Probes of Light Dark Matter (keV-GeV)

Wednesday, October 7, 2020 3:00 PM (3 minutes)

Primary frontier topic

Presenters: SOUSA, Alexandre (University of Cincinnati); YU, Jaehoon (University of Texas at Arlington)

Session Classification: 202. NF Planning

Contribution ID: **431** Type: **not specified**

109: Determining the Masses and Nature of Neutrinos

Wednesday, October 7, 2020 3:03 PM (3 minutes)

Primary frontier topic

Presenter: GIUNTI, Carlo (INFN)

Session Classification: 202. NF Planning

Contribution ID: **432**   Type: **not specified**

72: Dark Energy, Origins (Inflation), and Light Relics

Session Classification: 202. NF Planning

Contribution ID: **433** Type: **not specified**

77: Quantum Sensors for Wave and Particle Detection

Wednesday, October 7, 2020 3:06 PM (3 minutes)

Primary frontier topic

Presenter: FIGUEROA-FELICIANO, Enectali (Northwestern University)

Session Classification: 202. NF Planning

Contribution ID: **434** Type: **not specified**

124: Lattice Gauge Theory for High Energy Physics

Wednesday, October 7, 2020 3:09 PM (3 minutes)

Primary frontier topic

Presenter: BALANTEKIN, Baha (University of Wisconsin)

Session Classification: 202. NF Planning

Contribution ID: **435**   Type: **not specified**

126: BSM: direct and indirect searches

Wednesday, October 7, 2020 3:12 PM (3 minutes)

Primary frontier topic

Presenter: SHOEMAKER, Ian (Virginia Tech)

Session Classification: 202. NF Planning

Contribution ID: **436** Type: **not specified**

61: Energy and Power and Time structure goals for Neutrino Frontier programs

Wednesday, October 7, 2020 3:15 PM (3 minutes)

Primary frontier topic

Presenter: FIELDS, Laura (Fermilab)

Session Classification: 202. NF Planning

Contribution ID: **437** Type: **not specified**

81: Neutrinos and Computing: Preservation, Machine Learning, Uncertainties

Wednesday, October 7, 2020 3:18 PM (3 minutes)

Primary frontier topic

Presenter: HIMMEL, Alex (Fermilab)

Session Classification: 202. NF Planning

Contribution ID: **438** Type: **not specified**

127: Searches for dark sectors

Wednesday, October 7, 2020 3:21 PM (3 minutes)

Primary frontier topic

Presenters: LITTLEJOHN, Bryce (Illinois Institute of Technology); SHOEMAKER, Ian (Virginia Tech)

Session Classification: 202. NF Planning

Contribution ID: **439**   Type: **not specified**

29: Low-energy precision experiments

Wednesday, October 7, 2020 3:24 PM (3 minutes)

Primary frontier topic

Presenter: NEWBY, Jason (Oak Ridge National Laboratory)

Session Classification: 202. NF Planning

Contribution ID: **440**   Type: **not specified**

51: Requirements for low background and underground detectors

Wednesday, October 7, 2020 3:27 PM (3 minutes)

Primary frontier topic

Presenter: JONES, Benjamin (UTA)

Session Classification: 202. NF Planning

Contribution ID: **441** Type: **not specified**

97: Neutrinos as Probes of Standard and BSM Particle Physics

Wednesday, October 7, 2020 3:30 PM (3 minutes)

Primary frontier topic

Presenters: BALANTEKIN, Baha (University of Wisconsin); GIUNTI, Carlo (INFN); O'SULLIVAN, Erin (Uppsala University); YU, Jaehoon (University of Texas at Arlington)

Session Classification: 202. NF Planning

Contribution ID: **442**   Type: **not specified**

115: Neutrinos, dark matter, and underground facilities

Wednesday, October 7, 2020 3:33 PM (3 minutes)

Primary frontier topic

Presenter: OREBI GANN, Gabriel (UC Berkeley / LBNL)

Session Classification: 202. NF Planning

Contribution ID: **443** Type: **not specified**

110: Baryon and Lepton Number Violating processes

Wednesday, October 7, 2020 3:36 PM (3 minutes)

Primary frontier topic

Presenter: KOERNER, Lisa (University of Houston)

Session Classification: 202. NF Planning

Contribution ID: 444   Type: **not specified**

137: High and ultrahigh energy neutrino experiments

Wednesday, October 7, 2020 3:39 PM (3 minutes)

Primary frontier topic

Presenters: SCHMITZ, David (University of Chicago);   O'SULLIVAN, Erin (Uppsala University)

Session Classification: 202. NF Planning

Contribution ID: **445**   Type: **not specified**

119: HEP Workforce, Careers and Training

Wednesday, October 7, 2020 3:42 PM (3 minutes)

Session Classification: 202. NF Planning

Contribution ID: **446** Type: **not specified**

Schwinger field physics

Wednesday, October 7, 2020 1:00 PM (10 minutes)

Presenter: PESKIN, Michael (SLAC)

Session Classification: 186. High field (Schwinger limit) physics with intense electron and laser beams

Contribution ID: 447 Type: **not specified**

SLAC E-320 experiment

Wednesday, October 7, 2020 1:10 PM (5 minutes)

Primary frontier topic

Primary author: MEUREN, Sebastian (Stanford University)

Presenter: MEUREN, Sebastian (Stanford University)

Session Classification: 186. High field (Schwinger limit) physics with intense electron and laser beams

Contribution ID: **448** Type: **not specified**

LUXE experiment

Wednesday, October 7, 2020 1:15 PM (5 minutes)

Presenter: HEINEMANN, Beate (DESY and Freiburg University)

Session Classification: 186. High field (Schwinger limit) physics with intense electron and laser beams

Contribution ID: **449** Type: **not specified**

One-sliders

Wednesday, October 7, 2020 1:20 PM (3 minutes)

Session Classification: 186. High field (Schwinger limit) physics with intense electron and laser beams