IF9 cross-cutting

co-Conveners:

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Liaisons:

Area	Name	Institution	email
Early Career	Katherine Dunne	Stockholm U.	katherine.dunne[at]fysik.su.se
Gravitational Wave	Jess McIver	UBC	mciver[at]phas.ubc.ca

IF9 white papers

- Irradiation and test beam facilities white paper taking shape
  - contact Ian Shipsey if interested
- Cryogenic facilities white paper at advanced stage
  - Contact Jim Fast if interested
- Contributions for next-generation large-scale water and scintillator neutrino detectors being guided into existing technology and neutrino frontier white white papers
  - Contact Jim Fast if interested
- Low background facilities white paper still being defined, collecting LOI topics and guiding some to UF white papers. Coordinating with UF.
  - Contact Jim Fast if interested
- Silicon chip and CCD fabrication LOI’s being guided into existing white papers
  - Contact Maurice Garcia-Sciveres if interested

Cryogenic Facilities

A White Paper for Snowmass 2021

February 12, 2022

Y. Li, C. Zhang, M. Diwan, X. Qian, S. Martynenko, C. Thorn, J. Stewart, S. Kettell
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Abstract

Cryogenic test facilities are critical infrastructure for experiments in many areas, perhaps most notably for noble liquid particle detection and low temperature devices in particle detection and quantum information. However, considerable monetary investment and technical knowledge are required to construct and operate such facilities. This white paper discusses proposals for User facilities aimed at broadening the availability of testing capabilities to the wider scientific community.

Work CCDs into this one – expand scope

Large area CMOS monolithic active pixel sensors for future colliders

Martin Breidenbach, Angelo Dragone, Norman Graf, Tim K. Nelson, Lorenzo Rota, Julie Segal, Christopher J. Kenney, Ryan Herbst, Gunther Haller, Thomas Markiewicz, Caterina Vernieri, Charles Young

SLAC National Accelerator Laboratory

James Brau, Nikolai Sinev, David Strom

University of Oregon, Eugene

Marcel Demarteau

Oak Ridge National Laboratory

Contents

Work chip fabs into this one

Enabling Capabilities for Infrastructure and Workforce in Electronics and ASICs

Names and affiliations of contributing authors

ABSTRACT

Input input This is Carl testing!

Submitted to the Proceedings of the US Community Study
on the Future of Particle Physics (Snowmass 2021)

1 Introduction

2 Infrastructure

2.1 Sub topic Narrative here...

3 Workforce

3.1 XXX

4 Tools

4.1 XXX

5 Foundries

5.1 XXX

LOI table 1/2

	Coupling experiment and simulations		
16	CF1_CF0-NF5_NF0-RF4_RF0-AF5_Af0-IF9_IF0-052.pdf	shawest@princeton.edu	Neutron yield in (α, n)-reactions in rare-event searches
124	IF1_IF9-CF1_CF2-UF2_UF5-124.pdf	dbowring@fnal.gov	Coupling experiment and simulation to model non-equilibrium quasiparticle dynamics in superconductors
	Gravitation		
63	CF7_CF6-IF1_IF9_adhikari-063.pdf	rana@caltech.edu	LIGO Voyager A Gravitational-wave Probe of Cosmology and Dark Matter
	Microwave and RF Technologies		
125	IF1_IF9-CF2_CF0_Gianpaolo_Carosi-137.pdf	qu2@llnl.gov	Topological microwave circulators for HEP applications
256	IF7_IF9-CF2_CF4_Austin_Minnich-117.pdf	aminnich@caltech.edu	Towards quantum-limited transistor microwave amplifiers
	Facilities - Foundries		
72	IF2_IF9-017.pdf	christopher.leitz@ll.mit.edu	Large-format Germanium detectors
243	IF6_IF9_Kevin_Ryu-037.pdf	kevin.ryu@ll.mit.edu	Superconducting detectors for high energy physics
280	IF9_IF0_Dan_Pulver-022.pdf	MEL.Director@ll.mit.edu	Device processing
115	https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF1_IF2-177.pdf	cecil@anl.gov	Superconducting Detector Facility for HEP Science
	Facilities - Calibration and Test Beam		
154	IF2_IF9-NF10_NF6_Mark_Hartz-151.pdf	mhartz@triumf.ca	A 50 ton scale water Cherenkov test platform in a charged particle test beam
277	IF9_IF0-AF0_AF0_Evan_Niner-054.pdf	edniner@fnal.gov	New test beam facility at Fermilab
278	IF9_IF0-AF0_AF0_Petra_Merkel-041.pdf	petra@fnal.gov	High intensity proton irradiation facility
279	IF9_IF0-AF5_AF0_Natalia_Toro-045.pdf	ntoro@slac.stanford.edu	Linac to End Station A (LESA) as an electron test beam

LOI table 2/2

	Facilities - Low Noise (Environmentally stable) and Low Temperature		
95	https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF0_IF0_William_Terrano-087.pdf	Terrano	Highly Environmentally-Stable Facilities
120	https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF1_IF2-CF1_CF2_Hollister-155.pdf	Hollister	Establishment of a National Millikelvin User Facility
273	IF8_IF9-042.pdf	czhang@bnl.gov	Investigations of fundamental parameters of liquid argon for particle detection
	Facilities - Low Background		
275	IF8_IF9_Giovanetti-163.pdf	gkg1@williams.edu	Applications for underground Argon
340	https://www.snowmass21.org/docs/files/summaries/UF/SNOWMASS21-UF0_UF0-NF0_NF0-RF4_RF3-CF1_CF0-IF8_IF1-CompF6_CompF0-CommF1_CommF5_Heise-004.pdf	Heise	The Sanford Underground Research Facility
341	https://www.snowmass21.org/docs/files/summaries/UF/SNOWMASS21-UF0_UF0-NF10_NF5-CF1_CF0-IF9_IF0-006.pdf	Arnquist	An Ultralow Background Facility to Support Next Generation Rare Event Physics Experiments
342	https://www.snowmass21.org/docs/files/summaries/UF/SNOWMASS21-UF4_UF3-NF5_NF6-CF1_CF0-IF3_IF0-CompF2_CompF3-CommF5_CommF0-006.pdf	Mei	Advanced Germanium Detectors and Technologies for Underground Physics
UF #21	~~https://www.snowmass21.org/docs/files/summaries/UF/SNOWMASS21-UF0_UF0_Garcia-Sciveres-001.pdf~~	~~Garcia-Sciveres~~	~~Classification standard for underground research space~~