

Computing Frontier

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Co-conveners

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Computing Frontier Charge

- ◆ Computing has become essential to advances in experimental and many areas of theoretical physics. Research requirements in these areas have led to advances in computational capabilities. The participants in the Computing Frontier will address these issues:
 - What are the computational requirements for carrying out the experiments that will lead to advances in our physics understanding?
 - What are the computational requirements for theoretical computations and simulations that will lead to advances in our physics understanding?
 - What facility and software infrastructure must be in place in order to meet these requirements, and what research investments does it require in computing, storage, networking, application frameworks, algorithms, programming, etc. to provide that infrastructure?
 - What are the training requirements to assure that personnel are available to meet the needs?

Organization



- ◆ We have subgroups for user needs and for infrastructure.
- ◆ Each user needs subgroup interacts with the other frontiers to assess the computing needed to advance the science.
- ◆ The infrastructure groups are making projections of future computing capabilities and seeing how the user needs map onto the trends.
- ◆ If the trends indicate that research is needed to meet some computing needs, we will point that out to the funding agencies.

Experimental User Needs

◆ CpF E1: Cosmic Frontier

- ◆ Andrew Connolly (U. Washington), Alex Szalay (Johns Hopkins)

◆ CpF E2: Energy Frontier

- ◆ Ian Fisk (Fermilab), Jim Shank (Boston)

◆ CpF E3: Intensity Frontier

- ◆ Brian Rebel (Fermilab), Mayly Sanchez (Iowa St.);
Stephen Wolbers (Fermilab)

Theoretical User Needs

◆ CpF T1: Accelerator Science

- ◆ Estelle Cormier (Tech-X), Panagiotis Spentzouris (Fermilab); Chan Joshi (UCLA)

◆ CpF T2: Astrophysics/Cosmology

- ◆ no evidence that these conveners are doing their job

◆ CpF T3: Lattice Field Theory

- ◆ Ruth Van de Water (FNAL); Thomas Blum (UConn); Don Holmgren (FNAL)

◆ CpF T4: Perturbative QCD

- ◆ Stefan Hoeche (SLAC), Laura Reina (FSU); Markus Wobisch (Louisiana Tech)

Infrastructure Subgroups

◆ CpF I2: Distributed Computing and Facility Infrastructures

- ◆ Ken Bloom (U.Nebraska/Lincoln); Richard Gerber (NERSC); Sudip Dosanjh (NERSC)

◆ CpF I3: Networking

- Gregory Bell (LBNL); Michael Ernst (BNL)

◆ CpF I4: Software Development, Personnel, Training

- ◆ David Brown (LBL), Peter Elmer (Princeton); Ruth Pordes (FNAL)

◆ CpF I5: Data Management and Storage

- ◆ Michelle Butler (NCSA), Richard Mount (SLAC); Mike Hildreth (Notre Dame)

Parallel Sessions

- ◆ Our main sessions will be on Tuesday and Wednesday
 - Tuesday: 8:00-noon, Blegen 415
 - The user groups will be presenting their computing requirements.
 - Wednesday: 8:00-noon, Blegen 415
 - The infrastructure groups will present their finding and discuss user requirements and whether they stretch future capabilities.
 - **Larry Price** from DOE will give the Agency View of the Computing Frontier (11 a.m.)
 - Wednesday and Thursday: 8:00-noon, Blegen 105
 - Accelerator Science will hold parallel sessions
- ◆ We expect that Computing Frontier participants will visit other sessions to make sure we understand the major proposals and their computing needs

Plenary Session



- ◆ Joint colloquium with Instrumentation Frontier on Transformative Technologies for Instrumentation and Data
 - Sunday, 13:45-16:00
 - **Ian Fisk** will represent the Computing Frontier

Final Remarks



- ◆ We appreciate the input received from the rest of the community to identify user needs.
- ◆ Please feel free to send us additional advice or suggestions
 - computingfrontier@denali.physics.indiana.edu
 - for Bauerdick & Gottlieb
 - allcomputingfrontier@denali.physics.indiana.edu
 - for all subgroup conveners
- ◆ Thanks for your attention!