Opening Remarks

DOE SC Exascale Requirements Review
Bethesda Hyatt, June 2015

Richard Gerber, Salman Habib, Rob Roser

Welcome

- **A big thank you to each and every one of you for taking time out of your busy schedules to help with this effort**

- **Besides those in the audience, there are many not here that helped us assemble the "white papers" and case studies**

- **This is an important opportunity for HEP to express its desires and important to expand what is already a very strong HEP-ASCR Partnership**

Why are we here?

- **ASCR expects to have exascale machines on the floor in the early 2020's**

- **We (HEP) are being asked to to discuss with ASCR and ourselves what are our computational needs necessary to get to the best science over the next decade.**
  - This includes computing, storage, HPC, HTC, and networking needs as well as how we expect our software stack to evolve
  - Interested in "all" requirements for computing, storage, etc. need to support HEP research goals (not just the peak requirements)

- **We started to document our needs through a series of White Papers and Case Studies that were prepared specifically for this meeting by many of you**

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Some HEP Specific Questions

- **What changes in HEP computing practices would enable us to make the best use of ASCR Resources?**

- **How should the ASCR and HEP computing/data systems co-evolve in order to optimize our combined resources and talent**

- **How aggressive will HEP be in its use of GPU's and other co-processors?**

- **What is the nature of the required software environment for each application (this will vary considerably)**

- **What are the steps HEP needs to take <u>now</u> to be ready for this exciting new landscape and how to we educate our workforce?**

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Desired Outcomes from ASCR Perspective

- **Gather computing, storage, and HPC services required (at all scales) to support HEP research through 2020-2025**
  - Important to discuss application readiness for many-core/GPU and also application portability
  - Workflows
  - Compute and Storage
- **Mission Needs and Science Drivers**
  - Collect a set of white papers (bolstered with case studies) with scientific goals and how HPC requirements support achieving those goals
- **What scientists want to do with computers/storage in future and what do we need to acquire to enable that**
  - As many specifics of architecture required as possible: memory, network, disk, NVRAM, single-core performance, etc.

Logistics

Day 1

- **The goal of this day is to educate each other on where we are so to that we get the best use out of Day 2's discussion**

- **Main Topics**
  - Science Drivers and Facility Plans
  - Computing Challenges
    - Traditional HPC uses
    - Non-Traditional HPC and other opportunities
  - Q&A with the AD's

- **Goal for the day are high level findings**

Logistics

Day 2

– Summary of Day 1 Discussions

– Breakouts (2)

  • Traditional HPC

  • "Non-Traditional" use cases

– Working Group lunch to assemble quick breakout summaries (main themes, opportunities, challenges etc)

– Full group discussion of breakout summaries

– Breakouts craft high level findings

Day 3

– Subgroup work on report preparation

– End result will be a written report to DOE that will help both ASCR and HEP define their computing plans going forward

Thanks to the entire committee

- **Salman Habib, ANL**
- **Robert M Roser, FNAL**
- **Lali Chatterjee, DOE HEP**
- **Barbara Helland, DOE ASCR**
- **Dave Goodwin, DOE ASCR**
- **Carolyn Lauzon, DOE ASCR**
- **Sudip Dosanjh, NERSC**
- **Katie Antypas, NERSC**
- **Richard Gerber, NERSC**
- **Paul Messina, ALCF**
- **Katherine Riley, ALCF**
- **Tim Williams, ALCF**
- **James J. Hack, OLCF**
- **Jack Wells, OLCF**
- **Tjerk Straatsma, OLCF**
- **Julia White, OLCF**