

Science at Extreme Scales: Where Big Data Meets Large-Scale Computing Tutorials

Wednesday September 12, 2018

- 1:30 **Frank Jenko** (Max Planck Institute for Plasma Physics and UCLA)
Long Program Overview
- 9:40 **Claudia Draxl** (Humboldt-Universität)
Boosting materials science through BD & HPC
- 10:20 **Frank Jenko** (Max Planck Institute for Plasma Physics and UCLA)
Boosting plasma science through BD & HPC
- 11:00 **Jeffrey Hittinger** (Lawrence Livermore National Laboratory)
Big Data meets High-Performance Computing: An exciting new frontier

Thursday September 13, 2018

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–10:15 **Jeffrey Hittinger** (Lawrence Livermore National Laboratory)
The Challenges of Large-Scale Simulation
- 10:25–10:45 *Break*
- 10:45–12:00 **Michael Schulte** (AMD)
Hardware Aspects of Extreme Scale Systems for HPC and Big Data, part 1
- 12:10–12:40 *Core Orientation with IPAM Staff*
- 12:40–2:00 *Lunch (on your own)*
- 2:00–3:15 **René Jäkel** (Technische Universität Dresden)
Overview: challenges and research directions in large scale data analytics and management
- 3:25–3:45 *Break*
- 3:45–5:00 **Michael Schulte** (AMD)
Hardware Aspects of Extreme Scale Systems for HPC and Big Data, part 2



Friday September 14, 2018

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–10:15 **Jeffrey Hittinger** (Lawrence Livermore National Laboratory)
High-Performance Numerical Algorithms for Large-Scale Simulation
- 10:25–10:45 *Break*
- 10:45–12:00 **Alexander Szalay** (John Hopkins University)
Data Driven Discoveries in Science: from SkyServer to the SciServer, part 1
- 12:10–2:00 *Lunch (on your own)*
- 2:00–3:15 **Jeffrey Hittinger** (Lawrence Livermore National Laboratory)
Build It and They Will Come: How Hardware Influences Large-Scale Simulation
- 3:25–3:45 *Break*
- 3:45–5:00 **Alexander Szalay** (John Hopkins University)
Data Driven Discoveries in Science: from SkyServer to the SciServer, part 2

Monday September 17, 2018

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–10:15 **René Jäkel** (Technische Universität Dresden)
Current trends in big data analysis: second generation data processing
- 10:25–10:45 *Break*
- 10:45–12:00 **Brian Van Essen** (Lawrence Livermore National Laboratory)
Scalable deep learning: using parallel algorithms and HPC systems to train large models on big data set
- 12:10–2:00 *Lunch (on your own)*
- 2:00–3:15 **Karen Willcox** (University of Texas at Austin)
Model order reduction: Approximate yet accurate surrogates for large-scale simulation
- 3:25–3:45 *Break*
- 3:45–5:00 **René Jäkel** (Technische Universität Dresden)
Introduction to data analytics with Apache Spark + Hands-On/Walkthrough part

Tuesday September 18, 2018

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–10:15 **Karen Willcox** (University of Texas at Austin)
Multi-fidelity approaches: Fusing models and data to achieve efficient design, optimization and uncertainty quantification
- 10:25–10:45 *Break*
- 10:45–12:00 **Prabhat** (NERSC)
Introduction to Machine Learning
- 12:10–2:00 *Lunch (on your own)*
- 2:00–3:15 **Brian Van Essen** (Lawrence Livermore National Laboratory)
Deep Learning for Scientific Computing: Recent Success, challenges, and next steps
- 3:25–3:45 *Break*
- 3:45–5:00 **Prabhat** (NERSC)
Deep Learning for Science: current status and future directions

