2018 Annual Program Review Agenda

Sunday, July 15 – Thursday, July 19
Crystal Gateway Marriott Hotel, Arlington, VA

Updated Friday, August 10, 2018

Sunday, July 15	
4:00 – 8:00pm	**Registration** — *Grand Registration Desk*
5:30 – 6:00pm	**New Fellow Orientation** — *Salon D*
6:00 – 7:00pm	**New Fellow Dinner** — *Salon C*
7:00 – 9:00pm	**Making Connections Reception & Game Night** — *Skyview* *All conference attendees who have arrived in D.C. are encouraged to attend.*

Monday, July 16	
7:00am – 6:00pm	**Registration** — *Grand Registration Desk*
7:00 – 8:30am	**Continental Breakfast** — *Salons H & J*
7:30 – 8:30am	**Photo Session: Incoming Fellows (Portraits & Group Photo)** — *Madison*
8:30 – 8:45am	**Krell Institute Welcome & Incoming Fellows Introduction** — *Salons A, B & C* **Robert Voigt** — Vice President of Technical Programs, Krell Institute
8:45 – 9:00am	**DOE Office of Science Welcome** **Barbara Helland** — Associate Director, Advanced Scientific Computing Research, Office of Science, U.S. Department of Energy
9:00 – 9:15am	**DOE NNSA Welcome** **Mark C. Anderson** — Director, Office of Advanced Simulation and Computing and Institutional R&D Programs, National Nuclear Security Administration, U.S. Department of Energy
9:15 – 10:00am	**Keynote** **James Sethian** — Professor of Mathematics and James Simons Chair in Mathematics, University of California, Berkeley; Director, Center for Advanced Mathematics for Energy Research Applications (CAMERA), Lawrence Berkeley National Laboratory *"The Center for Advanced Mathematics for Energy Research Applications"*
10:00 – 10:20am	**Break** — *Foyer, Salons A, B & C*
Session I — *Salons A, B & C* **Moderator: Christine Chalk, Office of Science, U.S. Department of Energy**	
10:20 – 10:40am	**Alnur Ali** — Carnegie Mellon University *"Distributed Sparse Inverse Covariance Estimation from fMRI Data for Segmenting the Human Brain"*
10:40 – 11:00am	**Hilary Egan** — University of Colorado *"Ion Loss From Exoplanets"*
11:00 – 11:20am	**Gerald Wang** — Massachusetts Institute of Technology *"Engineering the Relationship Between Fluid Structure and Transport Under Nanoconfinement"*
11:20 – 11:40am	**Kyle Felker** — Princeton University *"Computational Efficiency of High-order Finite Volume Methods for Magnetohydrodynamics"*

11:45am – 1:00pm	**Luncheon & Civics Talk** — *Salons H & J* **Leland Cogliani** — Senior Consultant, Lewis-Burke Associates LLC
1:15 – 1:25pm	**Announcement of 2018 Frederick Howes Scholars** — *Salons A, B & C* **Jeffrey Hittinger** — Director and Division Leader, Center for Applied Scientific Computing, Lawrence Livermore National Laboratory; DOE CSGF Alumnus
1:25 – 2:10pm	**Howes Scholar Presentation** **Seth Davidovits** — Postdoctoral Research Fellow, Princeton University; DOE CSGF Alumnus *"Predicting and Utilizing Turbulence in Compressing Plasma"*
2:10 – 2:25pm	**Break** — *Foyer, Salons A, B & C*
2:10 – 5:00pm	**DOE Laboratory Poster Session Set Up** — *Salons H, J & K*
	Session II — *Salons A, B & C* **Moderator: Robinson Pino, Office of Science, U.S. Department of Energy**
2:25 – 2:45pm	**Julian Kates-Harbeck** — Harvard University *"Predicting Disruptions in Magnetic Confinement Fusion Reactors Via Deep Learning at the Largest Scale"*
2:45 – 3:05pm	**Hannah De Jong** — Stanford University *"Saturation Mutagenesis of MYH7 to Identify Hypertrophy-causing Variants"*
3:05 – 3:25pm	**Ryan McKinnon** — Massachusetts Institute of Technology *"Simulating Fluid-solid Interaction in Astrophysical Settings"*
3:30 – 4:45pm	**Practicum Session with DOE Laboratory Introductions** — *Salons A, B & C* *Intended for incoming fellows and those yet to complete a practicum. Each practicum coordinator will provide a brief introduction to their laboratory and speak to potential practicum experiences.*
5:00 – 7:00pm	**DOE Laboratory Poster Session** — *Salons H, J & K* **Welcome & Remarks** **Dimitri Kusnezov** — Chief Scientist and Senior Advisor to the Secretary, National Nuclear Security Administration, U.S. Department of Energy
	Tuesday, July 17
7:00am – 6:00pm	**Registration** — *Grand Registration Desk*
7:00 – 8:30am	**Continental Breakfast** — *Salons H & J*
8:30 – 8:45am	**CYSE Contest Award Presentation** — *Salons A, B & C* **Thomas R. O'Donnell** — Senior Media Editor, Krell Institute
	Session III — *Salons A, B & C* **Moderator: Thomas R. O'Donnell, Krell Institute**
8:45 – 9:30am	**Alumni Keynote** **Paul Sutter** — Astrophysicist, The Ohio State University; Chief Scientist, COSI Science Center; DOE CSGF Alumnus *"Let's Talk About Talking About Science"*
9:30 – 9:50am	**Jay Stotsky** — University of Colorado *"Computational and Mathematical Studies of the Biomechanics of Biofilms"*
9:50 – 10:10am	**Joy Yang** — Massachusetts Institute of Technology *"Statistically Identifying Mechanisms of Phage-host Interactions in the Nahant Collection"*
10:10 – 10:25am	**Break** — *Foyer, Salons A, B & C*
	Session IV — *Salons A, B & C*

Moderator: David Etim, National Nuclear Security Administration, U.S. Department of Energy

10:25 – 10:45am	**Mukarram Tahir** — Massachusetts Institute of Technology *"Molecular Design of Protein-mimetic Nanostructures"*
10:45 – 11:05am	**Aditi Krishnapriyan** — Stanford University *"Engineering Kinetics for Energy-Efficient Phase Change Materials: Application to Two-Dimensional MoS2"*
11:05 – 11:25am	**Alex Kell** — Massachusetts Institute of Technology *"Invariant and Hierarchical Computation in Human Auditory Cortex"*
11:25 – 11:45am	**Thomas Thompson** — Harvard University *"The Earth isn't Flat: The Large Influence of Topography on Geodetic Fault Slip Imaging"*
11:45am – 1:00pm	**Luncheon** — *Salons H & J*

Session V — *Salons A, B & C*
Moderator: David Etim, National Nuclear Security Administration, U.S. Department of Energy

1:15 – 1:35pm	**Kathleen Weichman** — University of California, San Diego *"Ion Acceleration by Relativistic-intensity Lasers With Magnetized Electron Focusing"*
1:35 – 1:55pm	**Adam Sealfon** — Massachusetts Institute of Technology *"Population Stability: Regulating Size in the Presence of an Adversary"*
1:55 – 2:15pm	**Adam Riesselman** — Harvard University *"Predicting the Effect of Mutations With Generative Models of Evolutionary Sequences"*
2:15 – 2:35pm	**Thomas Anderson** — California Institute of Technology *"The Fast Hybrid Method for Wave Scattering: New Advances in Time-Domain Integral Equations"*
2:35 – 2:50pm	**Break** — *Foyer, Salons A, B & C*

Session VI — *Salons A, B & C*
Moderator: David Etim, National Nuclear Security Administration, U.S. Department of Energy

2:50 – 3:10pm	**Danielle Rager** — Carnegie Mellon University *"Relating Visual Working Memory Computations to Network Architecture in the Brain"*
3:10 – 3:30pm	**Jordan Hoffmann** — Harvard University *"How to Build a Bug"*
3:30 – 5:00pm	**Fellows' Poster Session Set-Up** — *Salons H, J & K*
4:00 – 4:30pm	**Photo Session: Fellow/Alumni Portrait Retakes** — *Madison*
4:00 – 4:45pm	**Fourth-Year/Outgoing Fellow Session & Portraits** — *Jefferson*
5:00 – 7:00pm	**Fellows' Poster Session** — *Salons H, J & K* **Welcome & Remarks** **Paul M. Dabbar** — Under Secretary for Science, U.S. Department of Energy

Wednesday, July 18

7:00am – 5:00pm	**Registration** — *Grand Registration Desk*
7:00 – 8:30am	**Continental Breakfast** — *Salons D, E, F & G*
8:30 – 8:45am	**Announcements** — *Salons A, B & C*
8:45 – 9:30am	**Keynote** — *Salons A, B & C* **Katherine Lewis** — Cognitive Simulation Project Leader, Lawrence Livermore National Laboratory

	"Integrating Machine Learning with Simulations at Lawrence Livermore National Laboratory"
9:30 – 10:15am	**Keynote** — *Salons A, B & C* **Michael Heroux** — Director of Software Technology, DOE Exascale Computing Project; Senior Scientist, Sandia National Laboratories; and Scientist in Residence, St. John's University, Minnesota *"Building the Exascale Software Stack: Challenges and Strategies"*
10:15 – 10:30am	**Break** — *Foyer, Salons A, B & C*

HPC Workshop

Presented by DOE laboratory staff representing six facilities, the 2018 HPC Workshop will provide incoming through fourth-year fellows with hands-on training and access to Oak Ridge National Laboratory's Titan supercomputer. Fellows were surveyed and grouped into working teams prior to the program review. Non-fellows are welcome to attend the workshop as observers.

10:30 – 11:00am — **Workshop Overview & Introduction to HPC Problems** — *Salons A, B & C*

Organizers:

- Lawrence Berkeley National Laboratory/NERSC — **Jack Deslippe**
- Lawrence Livermore National Laboratory — **Jeffrey Hittinger**
- Oak Ridge National Laboratory — **Judith Hill**

Mentors:

- Argonne National Laboratory — **Hal Finkel**
- Oak Ridge National Laboratory — **Mark Berrill**, **Matthew Norman** and **Thomas Papatheodore**
- Lawrence Berkeley National Laboratory/NERSC — **Rahulkumar Gayatri** and **Charlene Yang**
- Lawrence Livermore National Laboratory — **Adam Kunen**
- Los Alamos National Laboratory — **Christoph Junghans**
- Sandia National Laboratories — **Michael Wolf**

11:00am – 12:00pm	**Introduction to Broad HPC Concepts** — *Salons A, B & C* *Intended for novice fellows. Session attendees have been preassigned.*
11:00am – 12:00pm	**Introduction to Performance & Scalability Tools** — *Salons H, J & K* *Intended for intermediate and advanced fellows. Session attendees have been preassigned.*
12:00 – 1:00pm	**Luncheon** — *Salons D, E, F & G*
1:00 – 6:00pm	**Team-based Collaboration With DOE Laboratory Mentor Support** — *Salons H, J & K* *The afternoon will include separate introductions to OpenMP3.5, MPI, CUDA and OpenACC, each followed by a working session focused on running and optimizing the corresponding version of BerkeleyGW code on Titan.*

Thursday, July 19

7:00 – 8:00am	**Continental Breakfast** — *Salons A, B & C*

HPC Workshop

8:00am – 12:00pm	**Team-based Collaboration With DOE Laboratory Mentor Support** — *Salons H, J & K* *Continued collaboration and workshop closing session.*
12:00 – 1:00pm	**Luncheon** — *Salons A, B & C* *Buffet-style with grab-and-go options for those with afternoon departures.*

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