INT Program 11-2a

EXASCALE WORKSHOP

June 27 – July 1, 2011

For those wishing to participate in the meeting remotely,
please go to the meeting's EVO URL:
http://evo.caltech.edu/evoNext/koala.jnlp?meeting=eueneevivaatavl8aBlu

All talks will be in A114, Physics/Astronomy Bldg, across the Plaza

Monday, June 27 AMR/MultiGrid

8:00-8:50 Check-In, Room C411, Physics/Astronomy Tower

8:50-9:00 INT Welcome, David Kaplan and participant introductions

I. Session Chair: Pavlos Vranas

9:00-9:30 Juan Meza, Lawrence Berkeley National Laboratory
"Domain Science/AM/CS: Exascale Partnerships"

9:30-10:20 John Bell, Lawrence Berkeley National Laboratory
"AMR Applications in Astrophysics"

10:20-10:40 Coffee Break

10:40-11:30 Rich Brower, Boston University
"MultiGrid Methods in Lattice QCD"

11:30-12:20 Cal Jordan, University of Chicago
"The Flash Code: From Astrophysics to NIF"

12:20-2:00 Lunch

II. Session Chair: Juan Meza

2:00-2:50 Martin Berzins, University of Utah
"Scalable Adaptive Meshing Uintah Framework"

2:50-3:40 Rob Falgout, Lawrence Livermore National Laboratory
"Multi-Grid Methods"

3:40-4:10 Coffee Break

4:10-5:00 Aurel Bulgac, University of Washington
"Real-Time Dynamics of Fermionic Superfluid Systems: from Deterministic Petascale to Stochastic Exascale Simulations"

5:00-5:50 Andrew Pochinsky, MIT
"Software Tools for Platform Independent Programming"

Tuesday, June 28 Solving Algebraic Systems

I. Session Chair: Esmond Ng

9:00-9:50 Pieter Maris, Iowa State University
"Computational Issues in ab initio Nuclear Structure"

9:50-10:40 Chao Yang, Lawrence Berkeley National Laboratory
"Eigenvalue Calculations"

10:40-11:10 Coffee Break

11:10-12:00 Mike Heroux, Sandia National Laboratories
"Building the Next Generation of Parallel Applications and Libraries"

12:00-2:00 Lunch

II. Session Chair: Martin Savage

2:00-2:50 Carol Woodward, Lawrence Livermore National Laboratory
"Nonlinear Solvers"

2:50-3:40 Tony Mezzacappa, Oak Ridge National Laboratory
"Supernova Simulations"

3:40-4:10 Coffee Break

4:10-5:00 Pavlos Vranas, Lawrence Livermore National Laboratory
"Lattice QCD on BlueGene"

5:00-5:50 Kostas Orginos, College of William & Mary and Jefferson Laboratory
"Algorithm Developments for Nuclear LQCD"

Wednesday, June 29 Performance/Monte Carlo

I. Session Chair: Stefan Wild

9:00-9:50 Martin Schulz, Lawrence Livermore National Laboratory
"Performance and Optimization: A Case for more Modular and Intuitive Tools"

9:50-10:40 Richard Graham, Oak Ridge National Laboratory
"Preparing Applications for Ultrascale Computing: A Tools Perspective"

10:40-11:10 Coffee Break

11:10-12:00 David Bailey, Lawrence Berkeley National Laboratory
"Performance Tuning of Scientific Applications"

12:00-2:00 Lunch

II. Session Chair: Tony Mezzacappa

2:00-2:50 Alexandre Chorin/Jakub Kominiarczuk, UC Berkeley
"Chainless Monte Carlo"

2:50-3:40 Dan Kasen, UC Berkeley and Lawrence Berkeley National Laboratory
"Monte Carlo Radiative Transfer in Astrophysics"

3:40-4:10 Coffee Break

4:10-5:00 Joe Carlson, Los Alamos National Laboratory
"Green's Function Monte Carlo"

5:00-5:50 Scott Klasky, Oak Ridge National Laboratory
" In Situ Data Processing for Extreme-Scale Computing"

7:00 Workshop Dinner at Bilbao Restaurant, NE 45th and 9th Ave NE

Thursday, June 30 Architectures/Programming Languages/GPUS

I. Session Chair: Joe Carlson

9:00-9:50 John Shalf, Lawrence Berkeley National Laboratory
"Advanced Architectures"

9:50-10:40 Jeffrey Vetter, Oak Ridge National Laboratory
"Large-scale Heterogeneous Computing"

10:40-11:10 Coffee Break

11:10-12:00 Brad Chamberlain, Cray/University of Washington
"Programming Models and Chapel"

12:00-2:00 Lunch

II. Session Chair: Huey-Wen Lin

2:00-2:50 Randy LeVeque, University of Washington
"Reproducible Research"

2:50-3:40 Tom Quinn, University of Washington
"N-Body Simulations on GPU Clusters"

3:40-4:10 Coffee

4:10-5:00 Balint Joo, Jefferson Laboratory
"Lattice QCD on GPU Clusters"

Friday, July 1

I. Session Chair: Bruce Barrett

9:00-9:50 Hank Childs, Lawrence Berkeley National Laboratory
"Visualization"

9:50-10:40 Bronson Messer, Oak Ridge National Laboratory
"Producing Science at the Top of the Top 500: The Challenges of Extreme Scalability and Hybrid-Multicore Computing"

10:40-11:10 Coffee Break

11:10-12:00 Peter Nugent, Lawrence Berkeley National Laboratory
"Astrophysical Surveys: Visualization/Data Management"

12:00-2:00 Lunch

II. Session Chair: Wick Haxton

2:00-2:50 Bob Rosner, University of Chicago
"Outlook: Exascale Computing and Science"