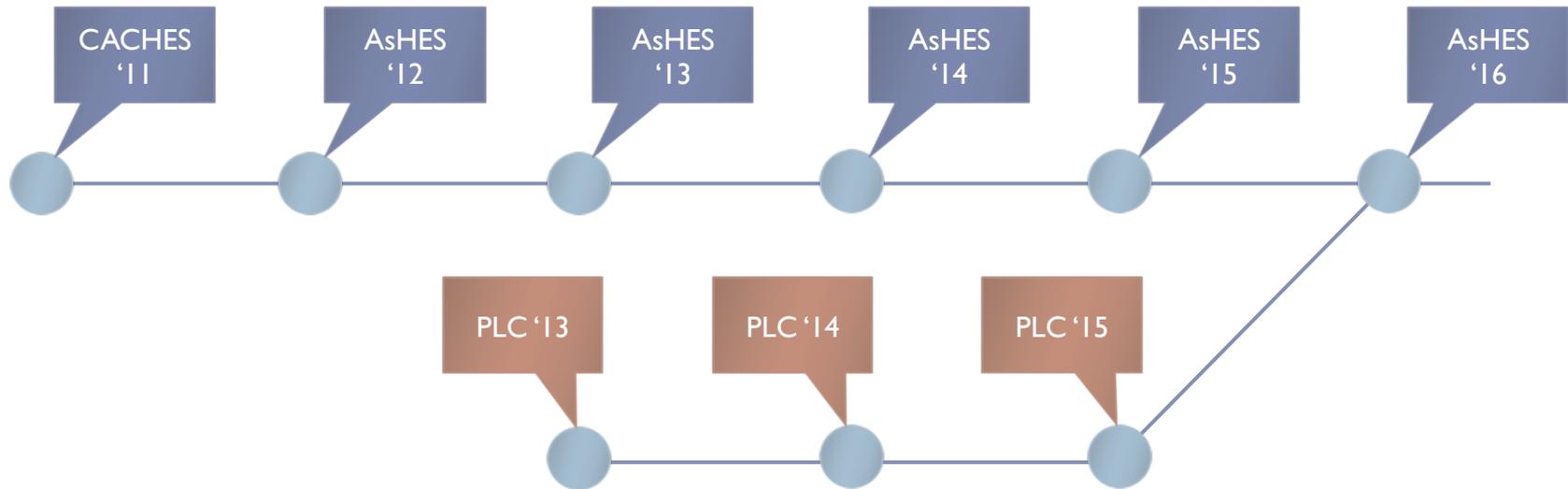


International Workshop on Accelerators and Hybrid Exascale Systems (AsHES 2016)



James Dinan
AsHES '16 General Chair

AsHES and PLC Have Joined Forces



- ▶ ASHES, Accelerators and Hybrid Exascale Systems
- ▶ PLC, Programming Models, Languages and Compilers for Manycore and Heterogeneous Architectures

Organizing Committee

▶ Steering Committee

- ▶ Pavan Balaji, Argonne National Laboratory (chair)
- ▶ Jiayuan Meng, Google
- ▶ Yunquan Zhang, Chinese Academy of Sciences
- ▶ Satoshi Matsuoka, Tokyo Institute of Technology
- ▶ Xiaosong Ma, Qatar Computing Research Institute
- ▶ Barbara Chapman, Stony Brook
- ▶ Guang R. Gao, University of Delaware
- ▶ Xinmin Tian, Intel
- ▶ Michael Wong, IBM

▶ General Chair

- ▶ James Dinan, Intel

▶ Program Co-chairs

- ▶ Antonio Peña, Barcelona Supercomputing Center
- ▶ Sunita Chandrasekaran, University of Delaware
- ▶ Wenguang Chen, Tsinghua University

ASHES Program Statistics

- ▶ **18 paper submissions**
 - ▶ ASHES prides itself with a thorough review process
 - ▶ Each paper received at least 4 reviews
 - ▶ 11 papers were accepted (61% acceptance rate)
- ▶ **29 PC Members**
 - ▶ Many thanks for their hard work and diligent reviews!
- ▶ **Thanks to the publicity and web chair for their help with the workshop**
 - ▶ Rezaul Karim Raju, University of Houston

ASHES 2016 Logistics

- ▶ **Four sessions:**
 - ▶ We will start with a keynote talk by Prof. Wen-mei Hwu
 - ▶ Three sessions for regular technical paper presentations
- ▶ **Workshop proceedings**
 - ▶ Included with the IPDPS proceedings as a companion volume
 - ▶ Part of IEEE Xplore (EI indexed)
- ▶ **For Presenters:**
 - ▶ Please meet session chair before the session starts
 - ▶ Please provide a short bio
 - ▶ Presentations may need to be copied to a common presentation laptop before the session (please check with your session chair!)
 - ▶ Please send your slides to raju.cse.buet@gmail.com and we will post slides on program page
- ▶ **Wireless Connectivity**

ASHES 2016 Sessions

- ▶ Session “0”: Keynote
- ▶ Time: 8:45am – 9:50am
 - ▶ *Addressing the Accelerator Programming Challenges in Exascale Systems*
 - ▶ *Wen-mei Hwu, University of Illinois, Urbana-Champaign*

ASHES 2016 Sessions (contd.)

- ▶ **Session I: Programming Models and Tools**

- ▶ **Time: 10:20am - 12:00pm**

- ▶ **Session Chair: Sandra Catalán, Universitat Jaume I, Castellón, Spain**

1. *Heterogeneous Streaming*

Cj Newburn, Gaurav Bansal, Michael Wood, Luis Crivelli, Judit Planas, Alejandro Duran, Paulo Souza, Leonardo Borges, Piotr Luszczek, Stanimire Tomov, Jack Dongarra, Hartwig Anzt, Mark Gates, Azzam Haidar, Yulu Jia, Khairul Kabir, Ichitaro Yamazaki and Jesus Labarta

2. *HMC-Sim-2.0: A Simulation Platform for Exploring Custom Memory Cube Operations*

John Leidel and Yong Chen

3. *Alpaka – An Abstraction Library for Parallel Kernel Acceleration*

Erik Zenker, Benjamin Worpitz, René Widera, Axel Huebl, Guido Juckeland, Wolfgang E. Nagel, Michael Bussman and Andreas Knüpfer

4. *A Tool for Bottleneck Analysis and Performance Prediction for GPU-accelerated applications*

Souley Madougou, Ana Lucia Varbanescu, Cees De Laat and Rob Van Nieuwpoort

ASHES 2014 Sessions (contd.)

- ▶ Session 2: Algorithms and Applications

- ▶ Time: 13:30pm – 15:10pm

- ▶ Session Chair: CJ Newburn, Intel

1. *Hessenberg Reduction with Transient Error Resilience on GPU-Based Hybrid Architectures*

Yulu Jia, Piotr Luszczek and Jack Dongarra

2. *Optimization of Block Sparse Matrix-Vector Multiplication on Shared-Memory Architectures*

Ryan Eberhardt and Mark Hoemmen

3. *Basker: A Threaded Sparse LU Factorization Utilizing Hierarchical Parallelism and Data Layouts*

Joshua Booth, Sivasankaran Rajamanickam and Heidi Thornquist

4. *Efficiency of general Krylov methods on GPUs – An experimental study*

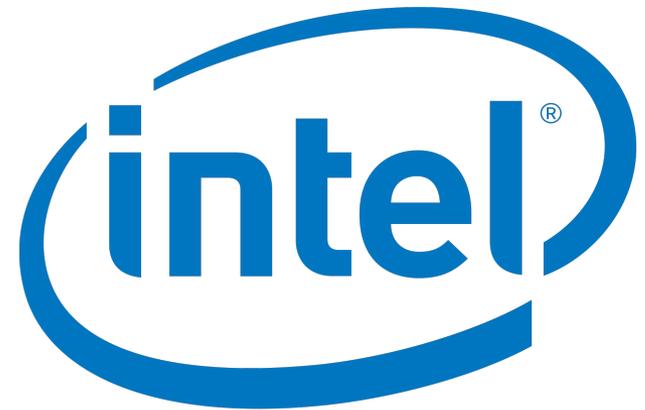
Hartwig Anzt, Jack Dongarra, Moritz Kreutzer, Gerhard Wellein and Martin Koehler

ASHES 2016 Sessions (contd.)

- ▶ Session 3: Workload Scheduling
 - ▶ Time: 15:40pm – 16:55pm
 - ▶ Session Chair: Piotr Luszczek, University of Tennessee, Knoxville, USA
 1. *Refactoring Conventional Task Schedulers to Exploit Asymmetric ARM big.LITTLE Architectures in Dense Linear Algebra*
Luis Costero, Katzalin Olcoz, Francisco D. Igual, Sandra Catalán, Rafael Rodríguez-Sánchez and Enrique S. Quintana-Ortí
 2. *Heterogeneous CAF-based Load Balancing on Intel Xeon Phi*
Valeria Cardellini, Alessandro Fanfarillo and Salvatore Filippone
 3. *Topology-Aware GPU Selection on Multi-GPU Nodes**
Iman Faraji, Seyed Hessem Mirsadeghi and Ahmad Afsahi
- * *Best Paper*

ASHES 2016 Best Paper Award

- ▶ *Topology-Aware GPU Selection on Multi-GPU Nodes*
Iman Faraji, Seyed Hessam Mirsadeghi and Ahmad Afsahi
- ▶ Last presentation of the day – stick around!
- ▶ Support for the award was provided by Intel



ASHES 2016 Journal Special Issue

Journal of High Performance Computing Applications (JHPCA)

- ▶ **Special Issue: “Accelerators and Hybrid Exascale Systems”**
 - ▶ Editors: Sunita Chandrasekaran and Antonio Peña
- ▶ **By-invitation only for ASHES 2016 accepted papers**
 - ▶ All II accepted papers will be invited (deadline mid August)
 - ▶ We have currently negotiating on how many we can include in the special issue
- ▶ **Journal requirements on acceptance:**
 - ▶ Needs to have 30% additional material
 - ▶ New results, more analysis, etc., are OK for the additional material
- ▶ **Important dates**
 - ▶ Submission deadline: T.B.D.
 - ▶ Plan is to publish the special issue by early 2017 (before ASHES 2017)

ASHES 2017

- ▶ Will continue to be with IPDPS 2017
- ▶ We are always looking for volunteers to help
 - ▶ Program Committee
 - ▶ Publicity
 - ▶ Web help
 - ▶ Other interesting things you want to help with

ASHES 2016 Keynote



- ▶ *Addressing the Accelerator Programming Challenges in Exascale Systems*
- ▶ *Prof. Wen-mei Hwu*
 - ▶ Walter J. ("Jerry") Sanders III - Advanced Micro Devices Endowed Chair
 - ▶ Dept. Electrical and Computer Engineering
 - ▶ Coordinated Science Laboratory
 - ▶ University of Illinois at Urbana-Champaign