Session 2: Many Core

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HPEC 2010

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At HPEC 2007:

- Theme: Multicore processors and their impact on DoD HPEC Systems
- Panel Session: Multicore Meltdown?
- Most discussed processors
  - FPGA: 14 abstracts
  - STI Cell BE: 12 abstracts
  - GPU: 9 abstracts

- Multicore processors need sophisticated programming techniques
- Keeping the cores busy is challenging
- Getting high performance is tricky
HPEC 2010

- Theme: Custom clouds & general purpose GPUs: their impact on DoD applications
- Panel Session: ISR Clouds
- Most discussed processors:
  - GPU: 16 abstracts
  - Tilera: 4 abstracts
  - STI Cell BE: 4 abstracts
  - FPGA: 3 abstracts

- Many Core processors need sophisticated programming techniques
- Keeping the cores busy is even more challenging
- Getting high performance is really tricky
Session 2: Agenda

■ Invited Talk
  ■ Richard Schooler / Tilera

■ Micro-op Fission: Hyper-threading Without the Hyper-headache
  ■ Daniel McFarlin / Carnegie Mellon University

■ Automatic Parallelization and Locality Optimization of Beamforming Algorithms
  ■ Albert Hartono / Reservoir Labs

■ Break (15 minutes)
Session 2: Agenda (cont.)

■ Performance Scalability on Embedded Many-Core Processors
  ■ Michael Champigny / Mercury Computer Systems

■ CRBLASTER: Benchmarking a Cosmic-Ray Rejections Application on the Tilera 64-core TILE64 Processor
  ■ Kenneth Mighell / National Optical Astronomy Observatory

■ Towards Mega-Scale Computing with pMatlab
  ■ Chansup Byun / MIT Lincoln Laboratory