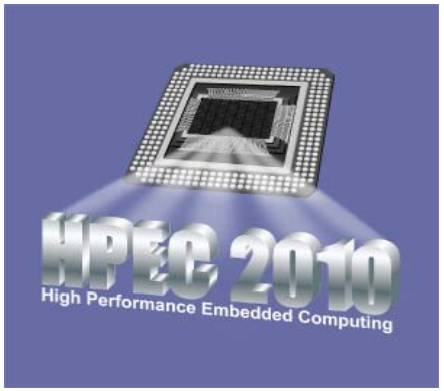
Session 2: Many Core

Sharon Sacco / The MITRE Corporation

HPEC 2010



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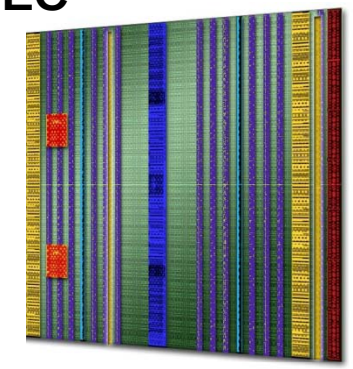
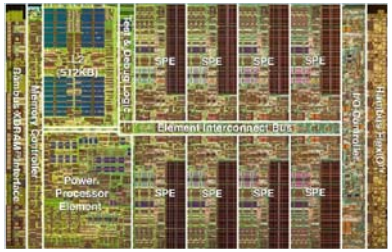
At HPEC 2007:

- 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

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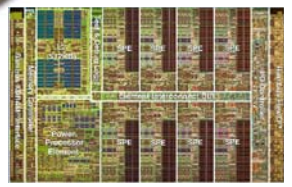
HPEC 2010

- 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

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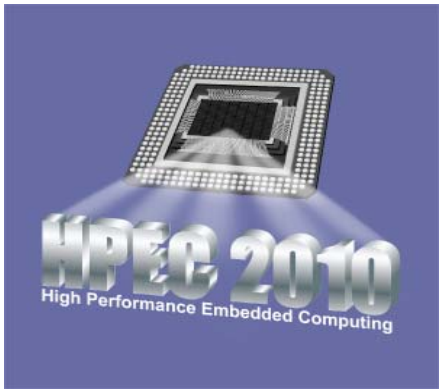
Session 2: Agenda

- 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