Advanced Processor Demonstrator status

A. Madorsky for APx consortium
Pooling of efforts in ATCA Processor hardware, firmware and software development

Multiple ATCA processors and mezzanine board types

Modular design philosophy, emphasis on platform solutions with flexibility and expandability

Reusable circuit, firmware and software elements
Advanced Processor Demonstrator (APd)

- ATCA standard
- Main board + Rear Transition Module (RTM)
- Large UltraScale+ FPGA
- Embedded Linux mezzanine for control functions (Zinq)
- IPMC mezzanine
  - another Zinq + Linux
- Gigabit Ethernet as main control interface
  - Option for 10G Ethernet
- ~100 optical links total
  - RX+TX each
  - Up to 28 Gb/s each
Main board + RTM

Main board screenshot from T. Gorski
Main board and RTM status

- **Main board:**
  - Layout finished
  - PCB in fabrication

- **RTM:**
  - Layout finished
  - PCB in fabrication
  - All parts purchased

- **Mechanical mock up made**
  - To make sure boards fit into ATCA crate and mate with each other
  - A number of mechanical errors identified and fixed
  - Proved to be a very useful exercise
ELM, IPMC, and Ethernet switch status

- **Embedded Linux Module**
  - ELM1 is a working prototype
  - ELM2 design starts in 2019
- **IPMC**
  - Working prototype
- **Ethernet switch**
  - Working prototype
- Hardware prototype fabricated
- Firmware development underway