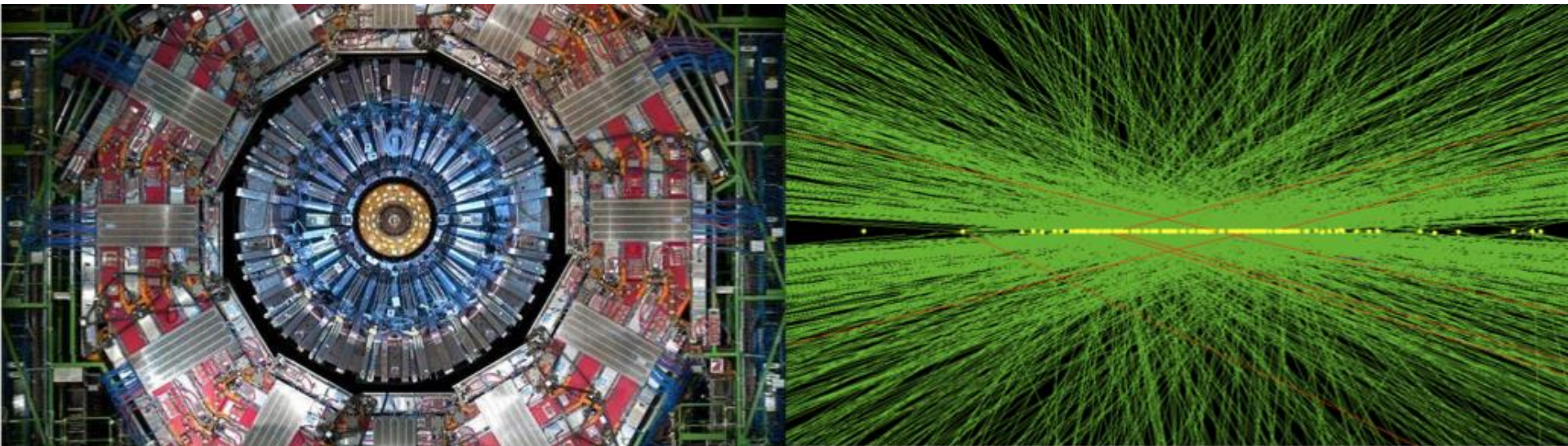


# Advanced Processor Demonstrator status

A. Madorsky for APx consortium



# The 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

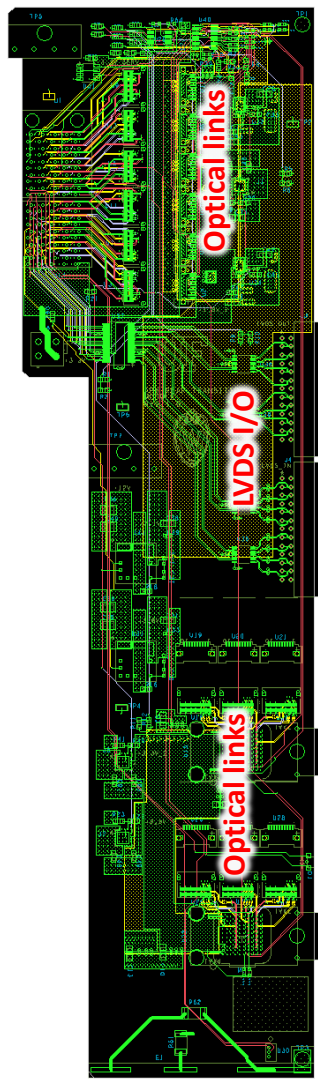
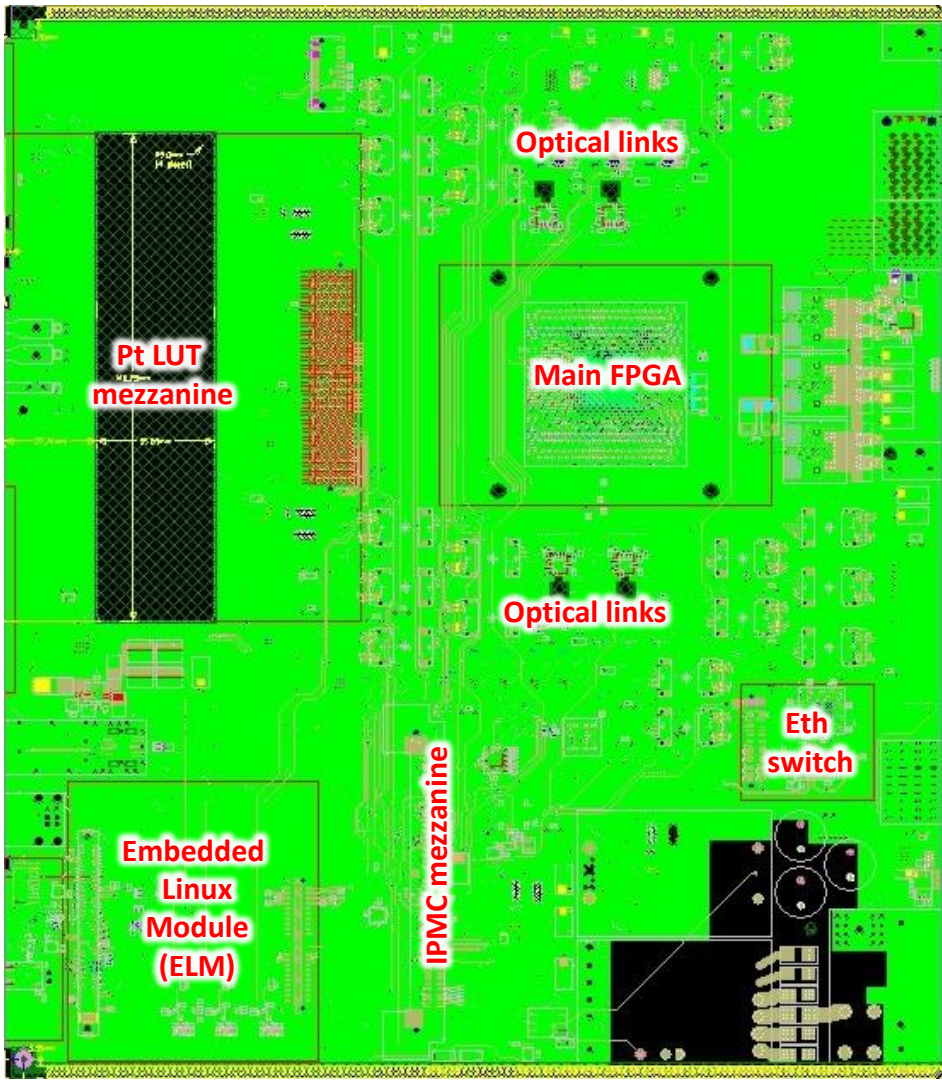




# Advanced Processor Demonstrator (APd)

- 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

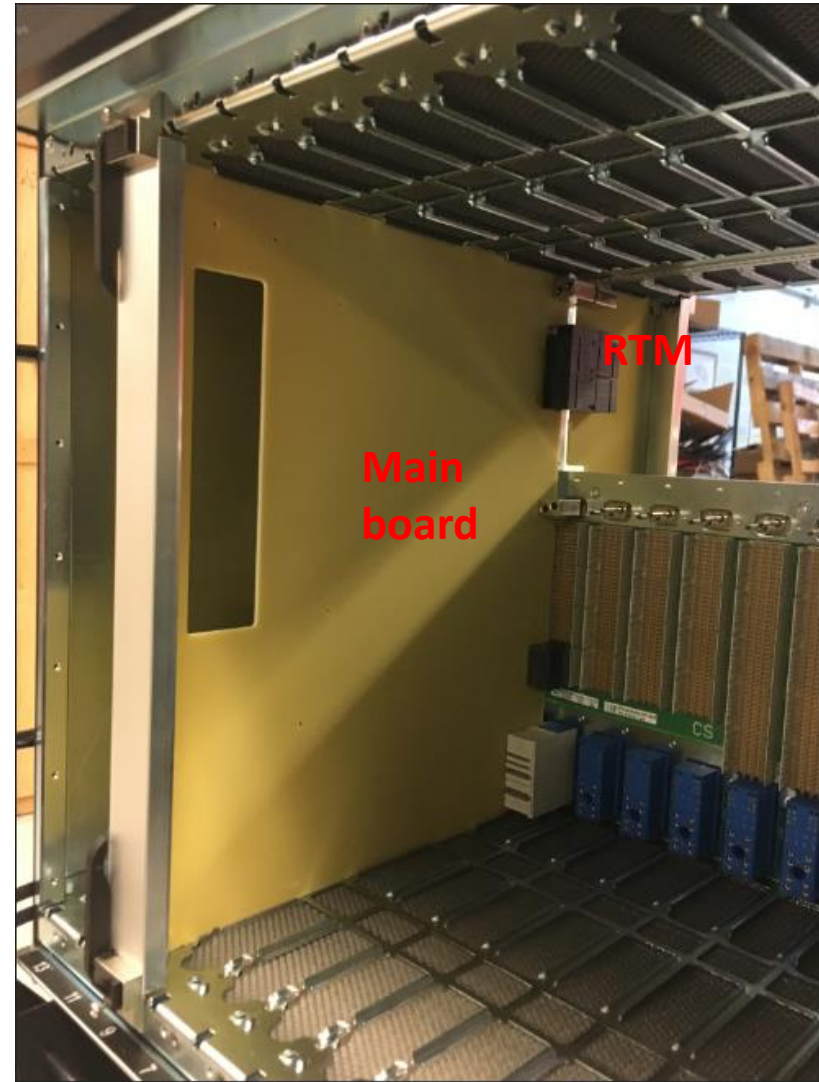
# Main board + RTM



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



# Large LUT Mezzanine 128 GB



- Hardware prototype fabricated
- Firmware development underway