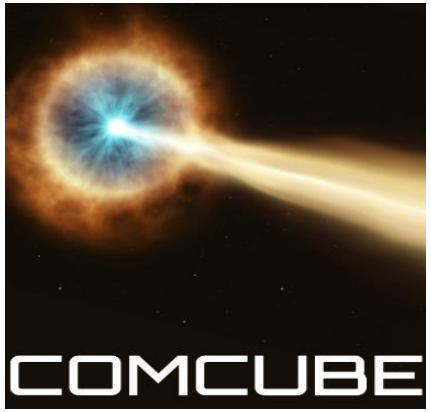
Firmware development of a prototype Compton telescope for flight on a stratospheric balloon



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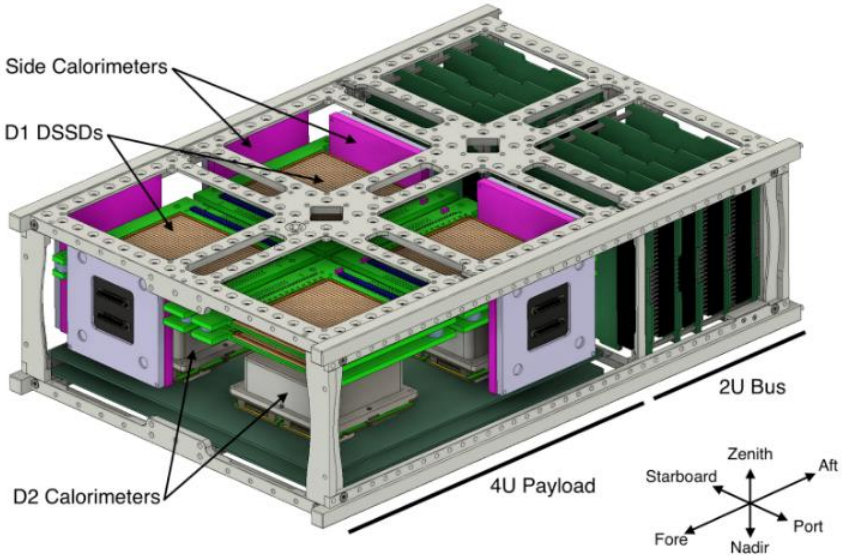
AHEAD 2020
HIGH ENERGY ASTROPHYSICS

Prototype Instrument

- 4 detectors in two layers with their own readout ASICS. IDE 3380 from IDEAS for the UCD D2 Calorimeter.
- All ASICS readout and configured with a ZYNQ-7030 SoC from Xillinx. SoC includes programmable logic (FPGA) component.
- Experiment control, TMTC, and science data aggregation performed by ARM cores of SoC.



Firmware Design Drivers

- Simple and Robust:
  - Reduces risk and time spent on validation.
- Modular:
  - IDE 3380 has a good heritage within our group and is a component of other upcoming instruments under development.
- Fast Development Cycle:
  - Use of off-the-shelf FPGA IP and S/W components.

How?