Dune ND Charge readout overview
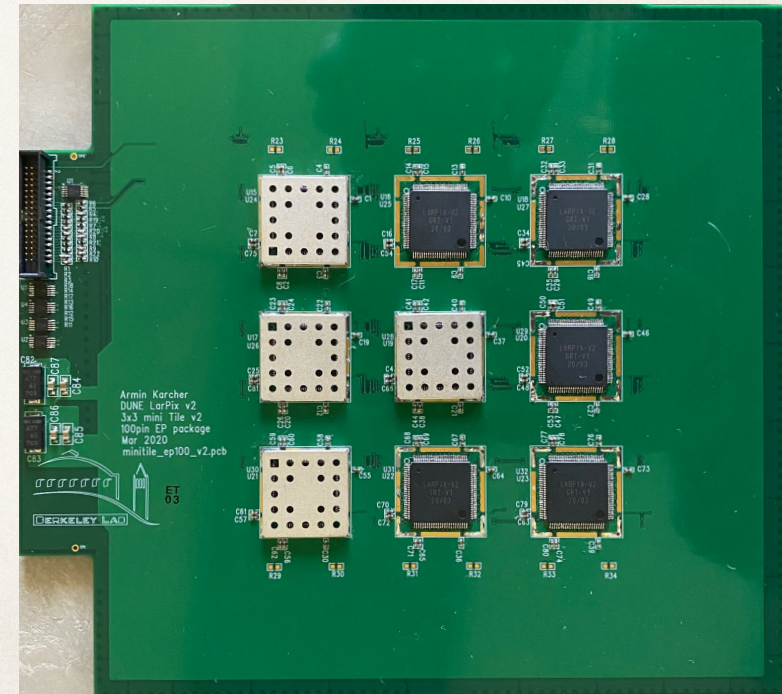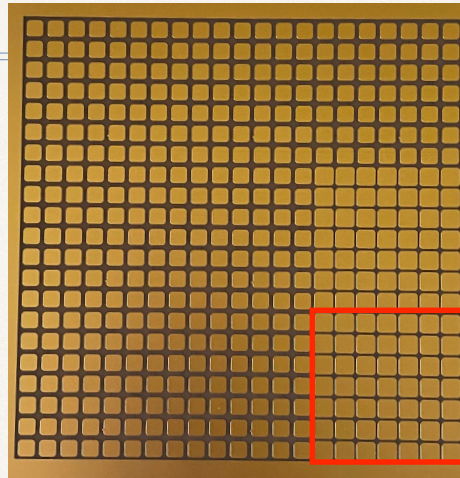
Armin Karcher

9/2/2020
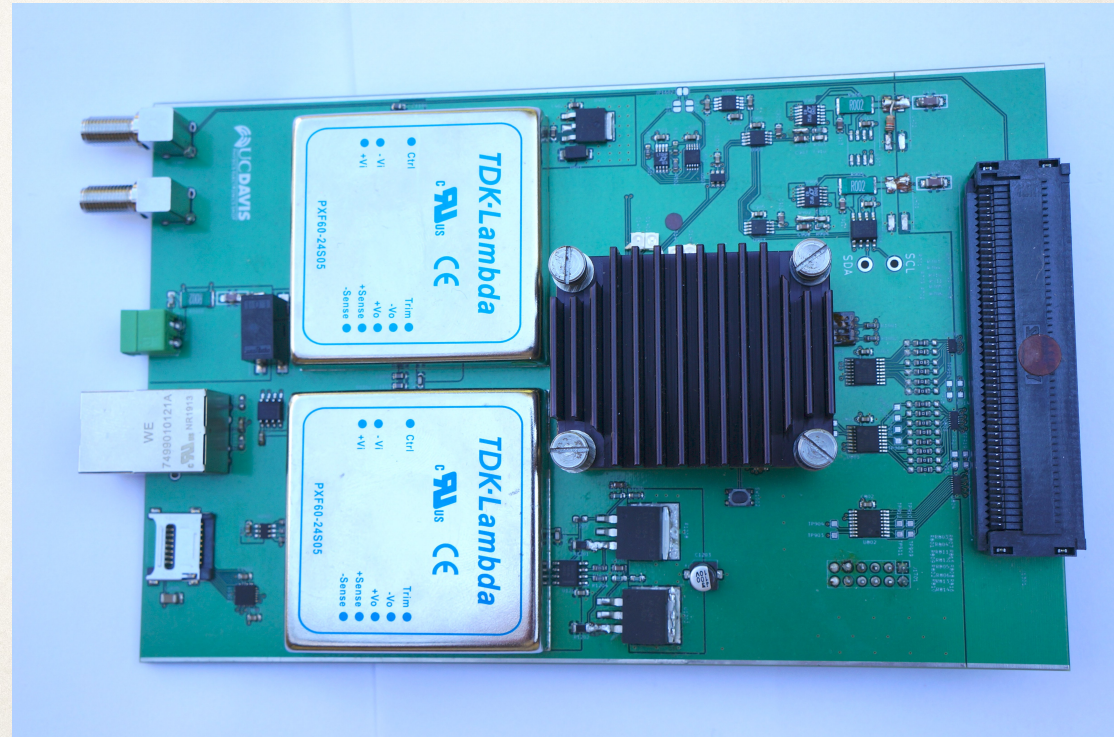
Charge readout basics

- Liquid Argon TPC

- Pixelated readout

- ADC, timestamp in dewar

- Unit cell is 7x7 pixels

- Ultra low power ADC, buffer and communications
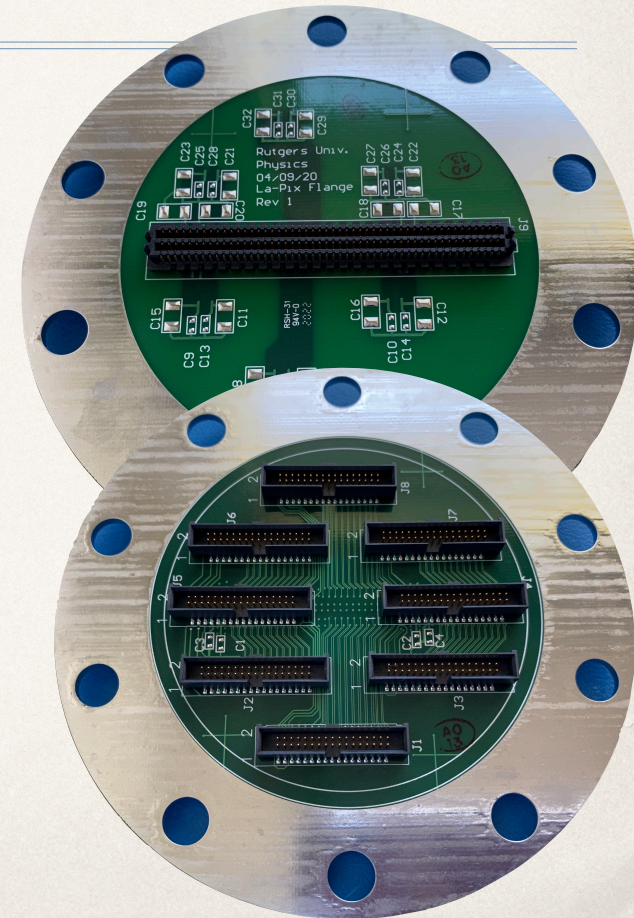
- Tile size limited by manufacturing and yield only

DAQ system

✤ All data is digital

✤ Data aggregation

✤ Data/clock line drivers

✤ Additional time stamping

✤ Power control

✤ Standard Ethernet I/O

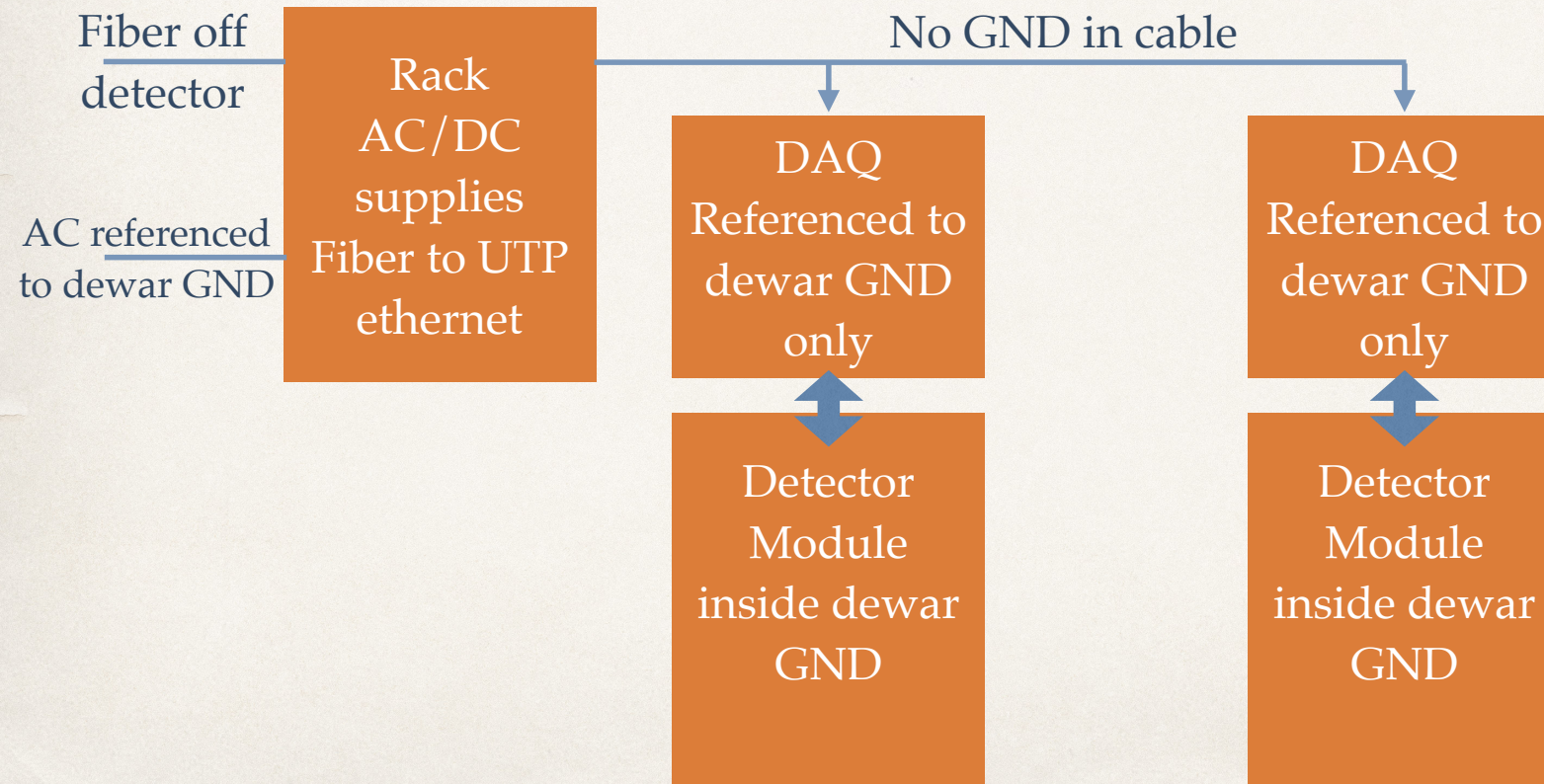# DAQ continued

* Miniaturized: Can be mounted directly on dewar feed-through

* Filters for signals, power, dewar ground directly at connector

* Currently I/O bound by FPGA module, connector

* Power DC/DC isolated

* Ethernet transformer coupled

System Level

Clock distribution TBD

- Clock distribution is not yet finalized

- Charge readout has very modest requirements (ms timescale)

- Candidates:

  - Ethernet PTP (PPS) — no extra cabling, some firmware challenges

  - White Rabbit receiver per detector module — Ties GND of multiple DAQ boards

Power supply

OMRON

Switch Mode Power Supply
S8VK-X (60/120/240/480 W models)

TE connectivity

PL506 Power Supply System

Print Product Data Sheet
Request Quote

PL506 Power Supply System

supply box allows to swap the power supply without any tools and within shortest time.

Noise filter
S8V-NF

Note: Refer to the S8V-NF Datasheet (Cat. No. T212) for details.

TE connectivity