1. Requirements

- Design for mission critical science for 1st flight
  - do not over design with too many features
  - do not get distracted by "new ideas" unless warranted

- Robust design
  - eliminate single point failure as much as possible; test hardware
  - easy to run by sleep deprived personnel
  - hard to make catastrophic mistakes

- Compatibility issues
  - space restrictions
  - power restrictions
  - RFI mitigation
  - Ground station command & control /CSP

- Documentation and training
  - several qualified operators
  - illness is common, delays (flight) common

- Management, Schedule, Q.C., Standards

2. AMANDA-II DAQ

- Show level of effort, issues, management
**AMANDA-II DAQ**

- 600 channels of waveform digitizers \([515 \text{ to } 3300]\)
- 100 MSa/s, 12 bit; 1mV LSB, 5052, 1024
- FPGA code does zero-waveform suppression
- DSP in VME crate does “feature extraction”
- 2 buffers 1Msa deep ⇒ little deadtime
- Design to increase trigger rate to \(~200\ Hz\) up from \(~72\ Hz\) \&/15\% deadtime

Production of data:

\[(200/s)(600\ \text{oms})(1024)(2\ \text{bytes/5a}) = 2.4 \times 10^8\ \text{bytes/s}\]

Write to tape [waveform suppression + feature extr.]

Goal: \((200/s) [40\ \text{oms}][10\ \text{Sa/feature}][28/5a] = 160\ \text{KB/s}\)

2003: \((80/s) [40\ \text{oms/cm}][0.05 \times 1024\ \text{Sa}][28/5a] = 328\ \text{KB/s}\)

- Pre-scaled, filtered data
  + hard part
merging procedure:  [Henrike?]
raw_T2R → f2K > C++ event class
raw-μ → f2K

or
raw_T2R → C++ > C++ event class
raw-μ → C++

- reading merged data file / reading raw-T2R
  how is this done
  should we coordinate with Sieg mund Upgrade?
  should we wait for Ice³ [No, but...]

T2R monitoring / archiving [Jens]
merged or raw T2R?

Upgrading polechomper [Darryn]
- how much work is involved
- what do you need to know, and when do you need to know it?
- satellite transmission of M ≥ 80 events

Calibration [Barwick]
- check μ-DAQ/T2R LE correlation [Silvestri]
- determine string-specific Tφ offset
- programmable common stop
- N₂ in-situ calibration [w/ Kurt.]
- determine proper zero-suppression thresholds
- LED (str 18) calibration
- temporary reduction of 8 PMT gain / T2R threshold
- surface TO pulses
- Run T2R at 10ns/sample → 100ns
TWR Workshop

1. Pole activities overview (Barwick)

2. TWR hardware status (Karl-Heinz)
   - Electronics
   - System architecture
   - Control software
   - Initial assessment of system performance

3. “Zero suppression” and feature extraction (W. Wagner)
   - Zero suppression implementation in TWR firmware
   - Test of procedures;
   - Feature extraction from waveform efficiency for optical channels
   - Efficiency for electrical channels
   - Data format saved to disk

4. Event building
   - Status of software
   - Description of procedure
   - File format converters?

5. Merging with μ-DAQ [Thomas or Jens]
   - Do we have sufficient CPU, disk and tape capabilities
   - Status of software