“hybmon” (Hybrid Monitor) Program Functionality

Run IIb Upgrade Workshop
Davis
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Outline

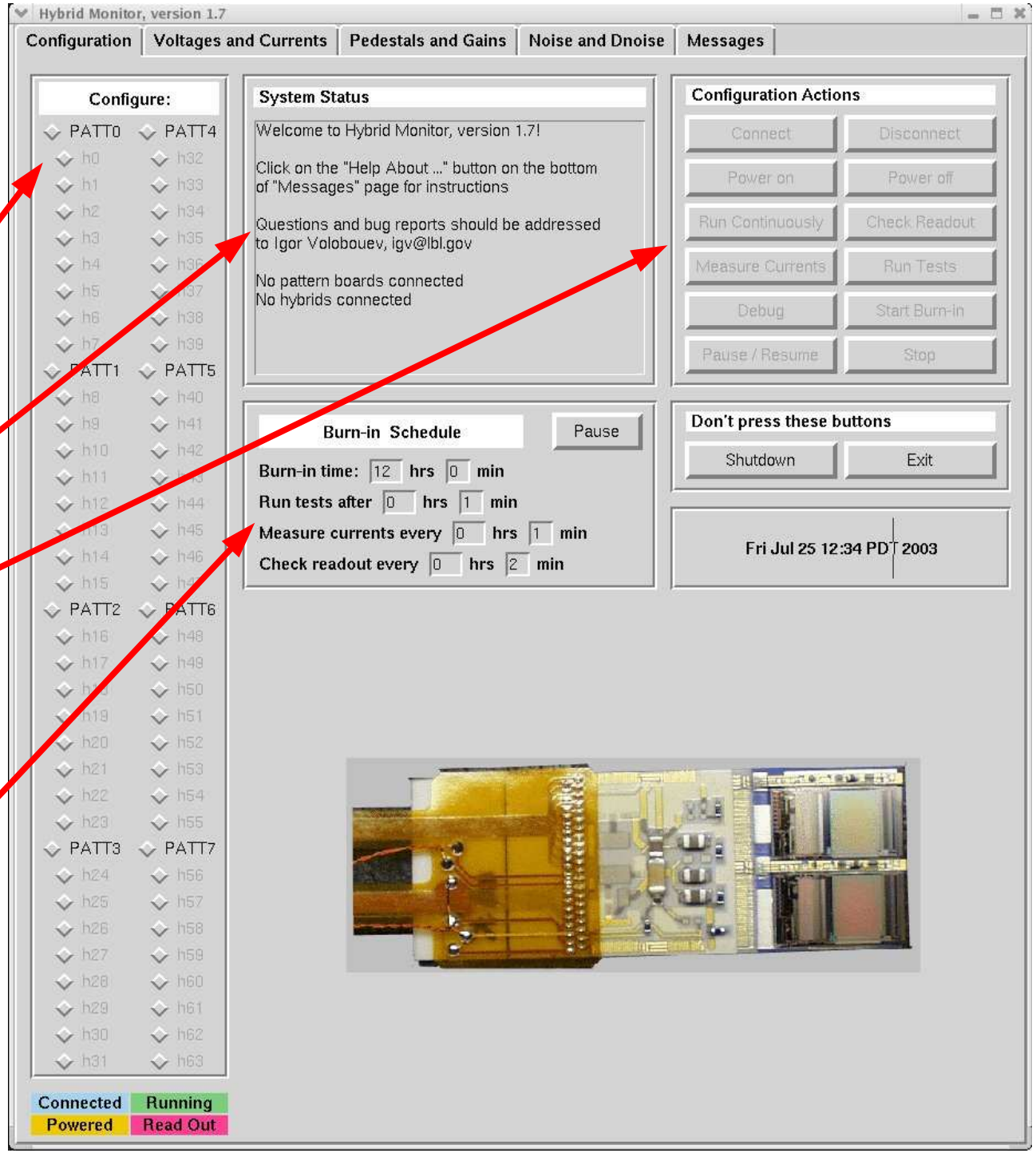
- Requirements and features of hybmon program for burn-in
- Stages of burn-in
- Time sequence of burn-in stages
- Offline monitoring and QA / QC
- Conclusions

Requirements

- Exercise SVX4 through series of patterns
- Test with full suite of “htests” at beginning and end
- Periodically check data integrity
- Monitor currents and voltages
  - shut down power to any hybrids operating above safe limits
  - periodically record levels for offline QA / QC
- Automate the sequence of events
- Provide logging

Features

- Connect and power-up 8 “arms” x 8 ports = 64 hybrids
- Read messages about status of tests on each hybrid
- Control state of each arm and hybrid, and the entire burn-in
- Define the duration of the burn-in stages



Stages of Burn-in

- Burn-in pattern:
  - This is the “default” state
  - Keeps hybrids in a tight loop of:
    initiallize→acquire→digitize→readout
    but data is not read out through pattern board FIFO
  - Period of ~50 μs
- Htests:
  - 21 minute suite of tests, run at beginning and at end
- Data readout integrity checks:
  - Checks chip IDs, cell IDs, and channel numbers
  - Occurs at user defined interval (e.g. every 20 minutes)
- Current and voltage monitoring:
  - Checks and records AVDD, I_AVDD, I_DVDD, & hybrid ground
  - Occurs at user defined interval (e.g. every 2 minutes)

Hybmon, the Movie

The cast and crew:

⇒ Burn-in pattern

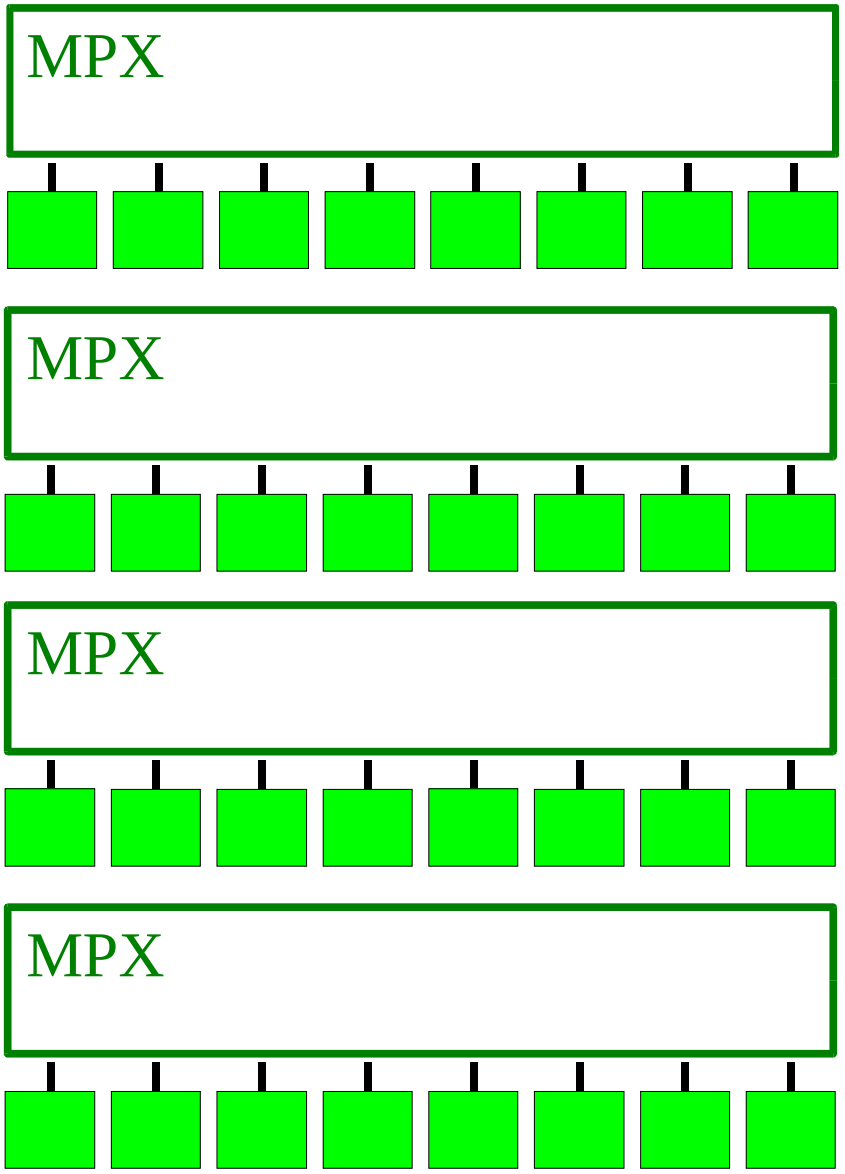
Current/Voltage measurement

Readout integrity check

Htest

Receiving same pattern
as hybrid under test/check

(time is not to scale)



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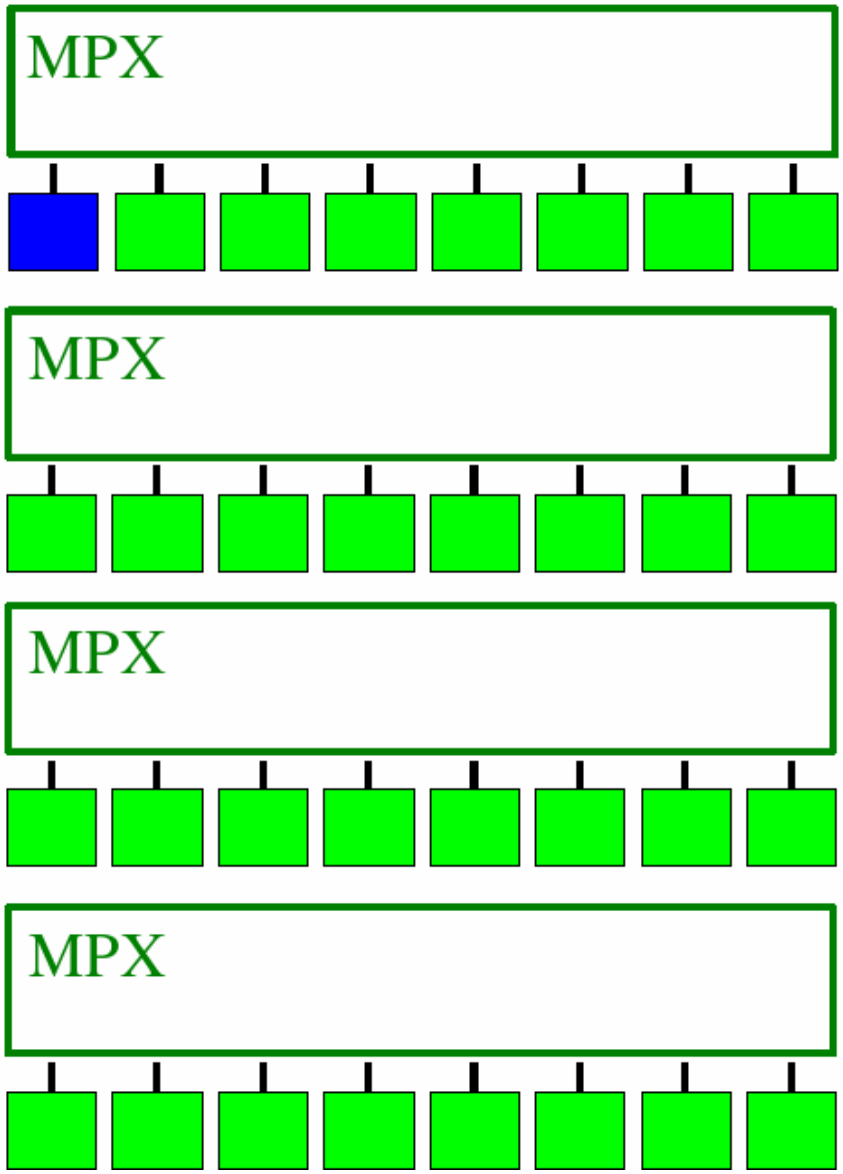

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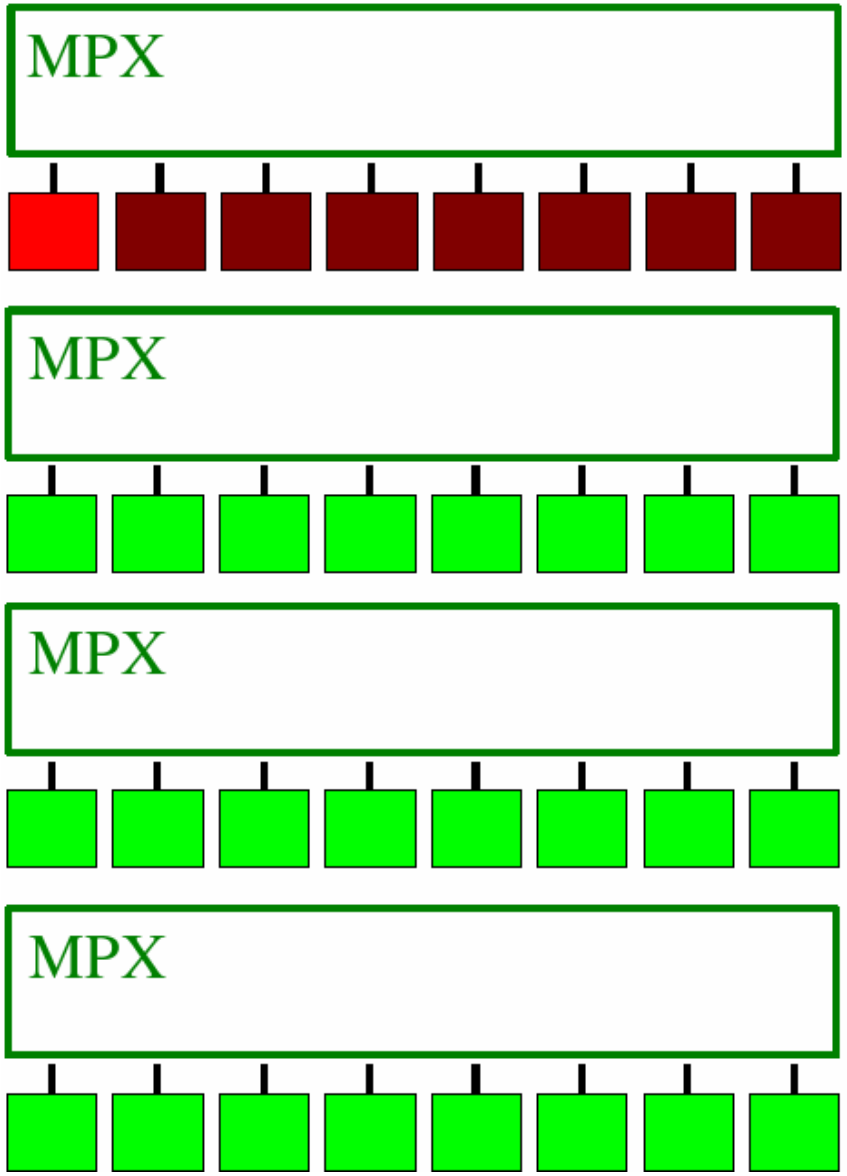

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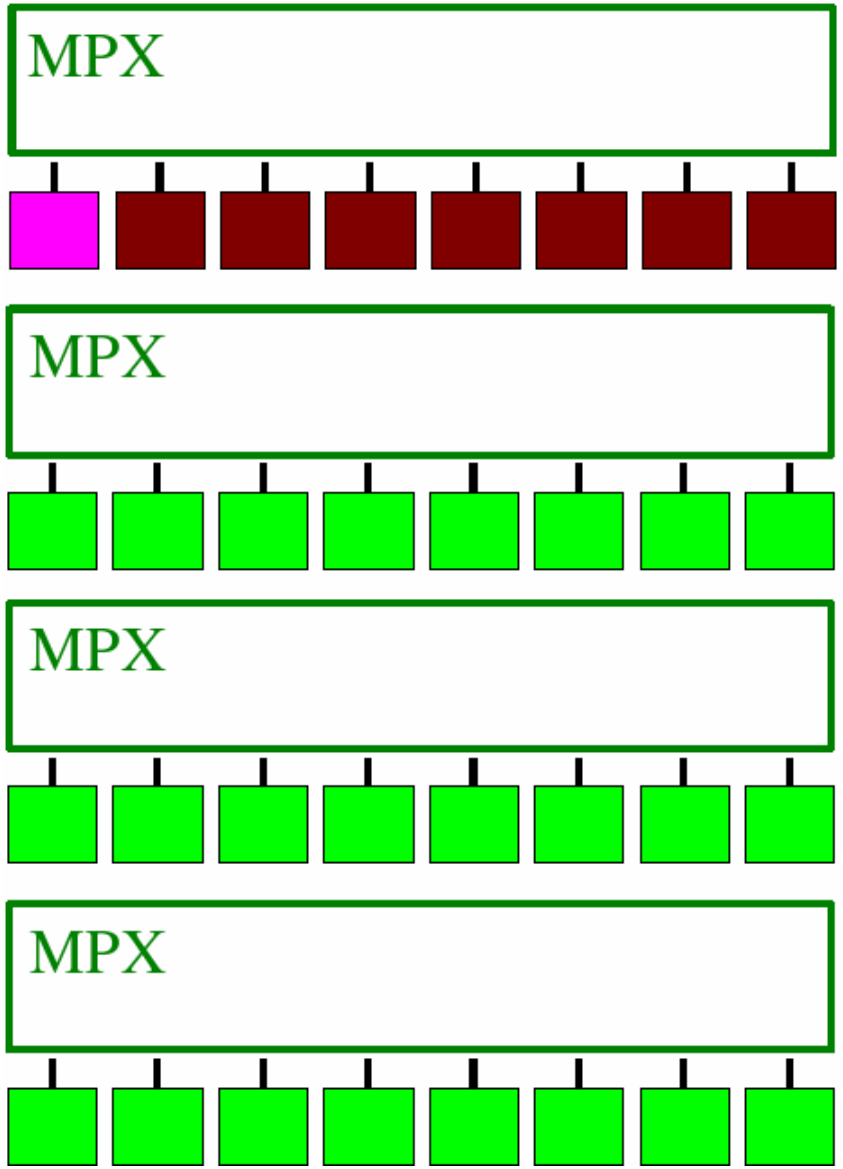

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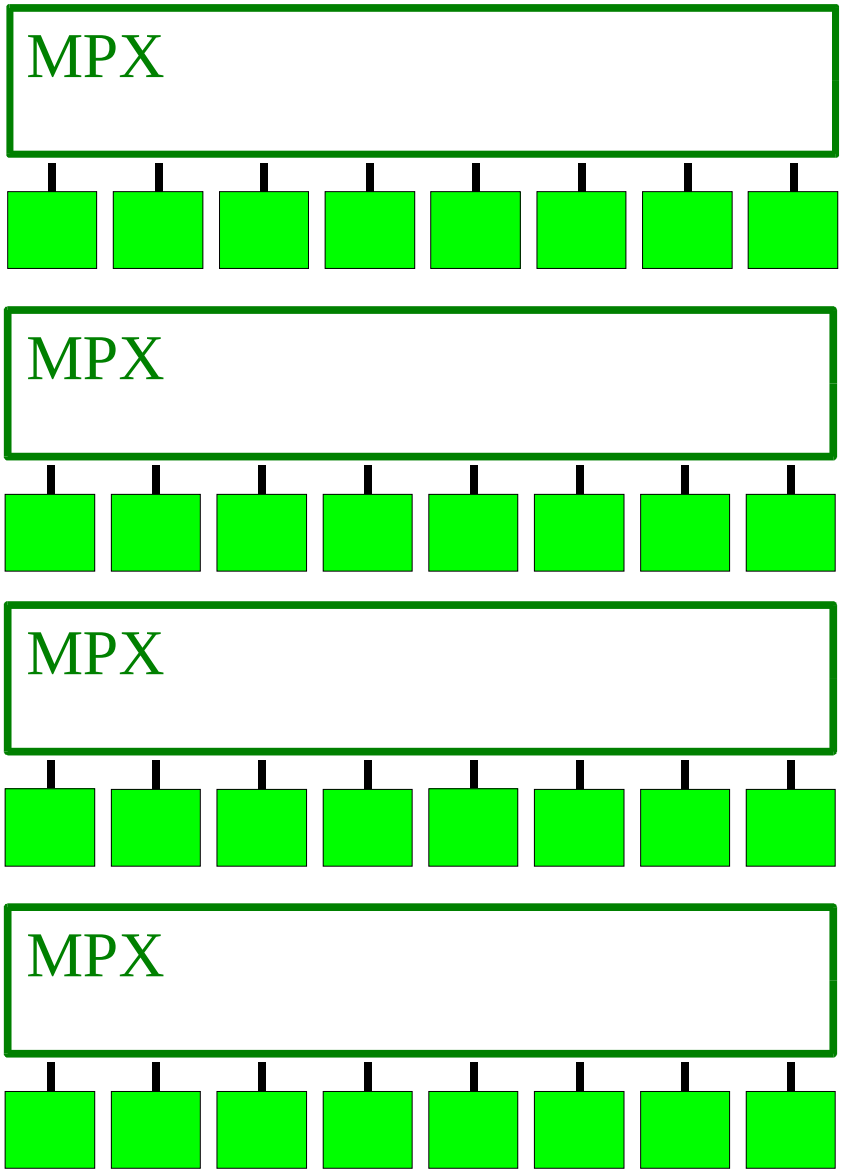
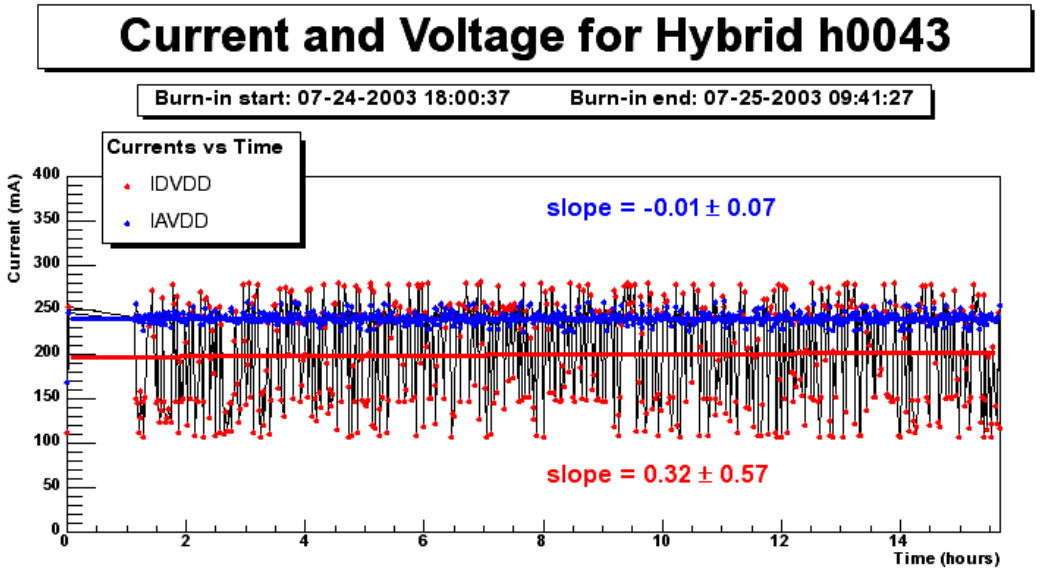
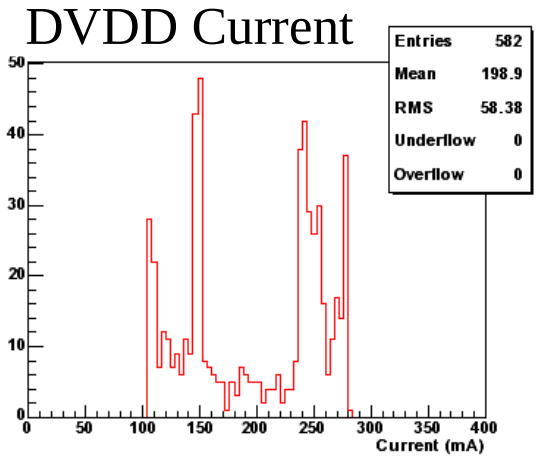
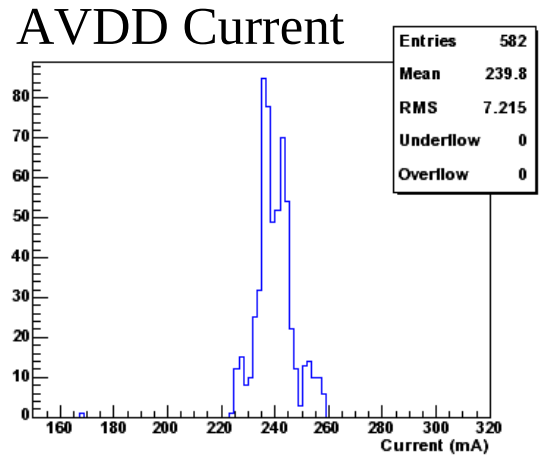


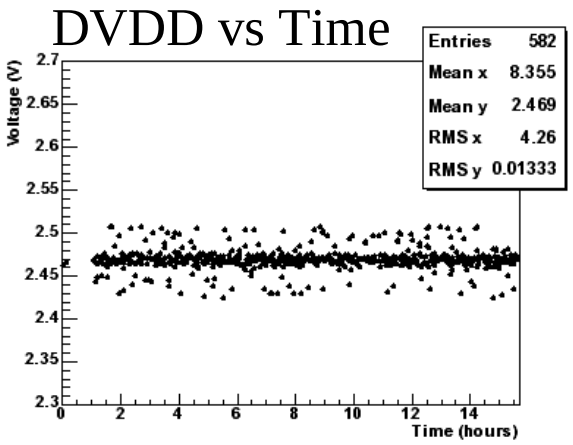
Offline Monitoring of Currents and Voltages

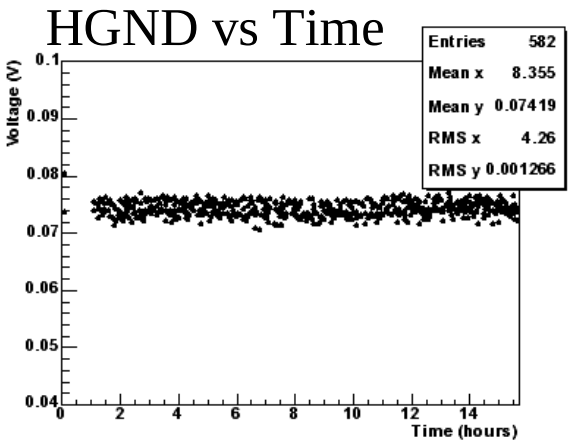
- Hybmon has been modified to write an ASCII file with date/time, current, voltage
- After (or during) burn-in, a root macro is used to generate a summary page for each hybrid involved
- Viewable on web and will be linked to burn-in section of hybrid tracker database











Conclusions

- Earlier work has given us a feature-rich piece of software (Igor Volobouev / LBL)
- Hybmon has been upgraded to control up to 64 hybrids
- Preproduction will allow for final testing of the new features
- New offline monitoring tools to help with QA / QC