"hybmon" (Hybrid Monitor) Program Functionality

Run IIb Upgrade Workshop
Davis
July 28, 2003
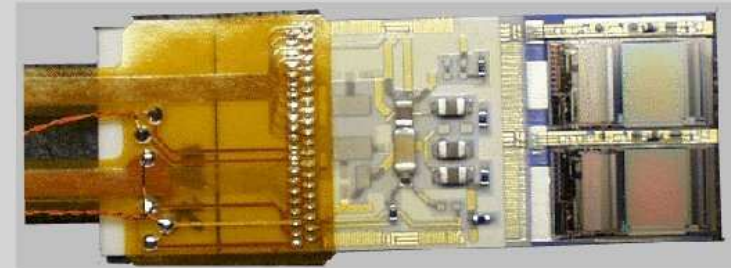
Aron Soha
(U. C. Davis)

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

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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

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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

Hybrid Monitor, version 1.7

Configuration | Voltages and Currents | Pedestals and Gains | Noise and Dnoise | Messages

Configure:

PATT0 PATT4
h0 h32
h1 h33
h2 h34
h3 h35
h4 h36
h5 h37
h6 h38
h7 h39
PATT1 PATT5
h8 h40
h9 h41
h10 h42
h11 h43
h12 h44
h13 h45
h14 h46
h15 h47
PATT2 PATT6
h16 h48
h17 h49
h18 h50
h19 h51
h20 h52
h21 h53
h22 h54
h23 h55
PATT3 PATT7
h24 h56
h25 h57
h26 h58
h27 h59
h28 h60
h29 h61
h30 h62
h31 h63

System Status

Welcome to Hybrid Monitor, version 1.7!

Click on the "Help About ..." button on the bottom of "Messages" page for instructions

Questions and bug reports should be addressed to Igor Volobouev, igv@lbl.gov

No pattern boards connected
No hybrids connected

Burn-in Schedule   Pause

Burn-in time: 12 hrs 0 min
Run tests after 0 hrs 1 min
Measure currents every 0 hrs 1 min
Check readout every 0 hrs 2 min

Configuration Actions

Connect | Disconnect
Power on | Power off
Run Continuously | Check Readout
Measure Currents | Run Tests
Debug | Start Burn-in
Pause / Resume | Stop

Don't press these buttons

Shutdown | Exit

Fri Jul 25 12:34 PDT 2003

Connected | Running
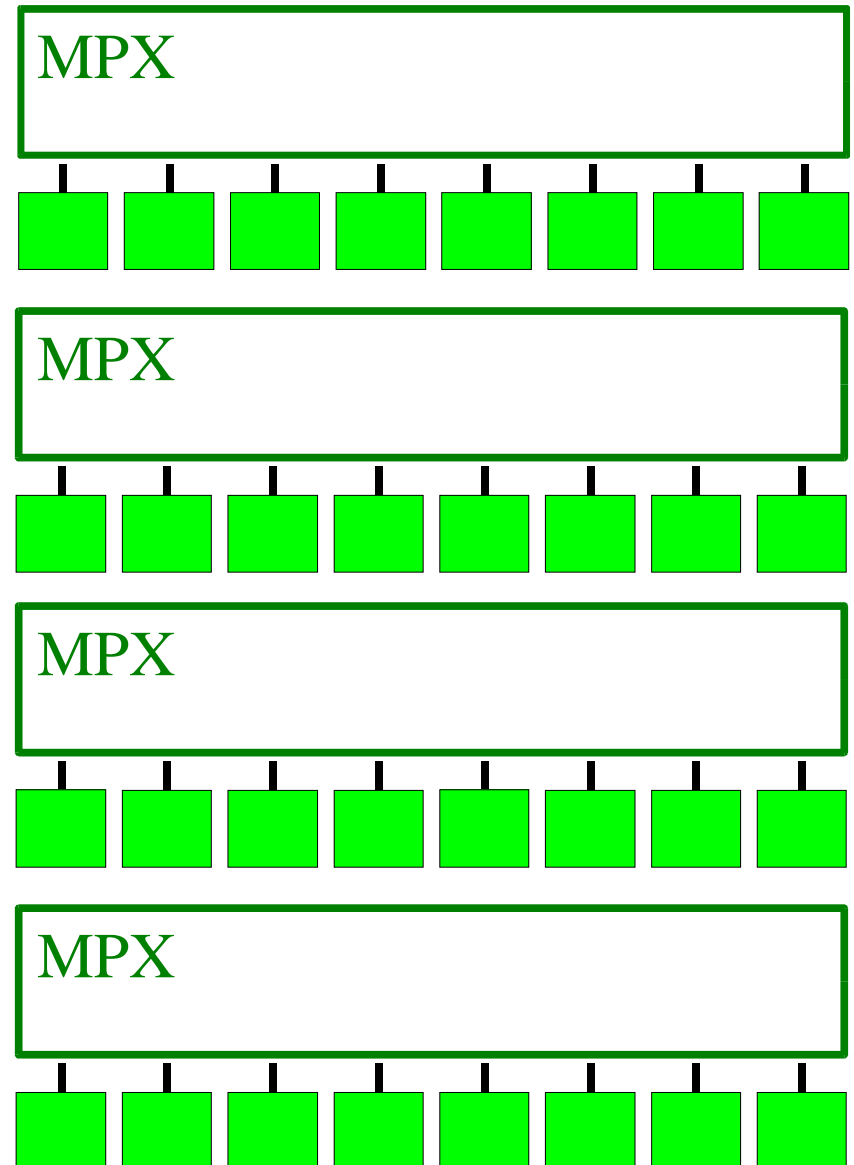Powered | Read Out

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)

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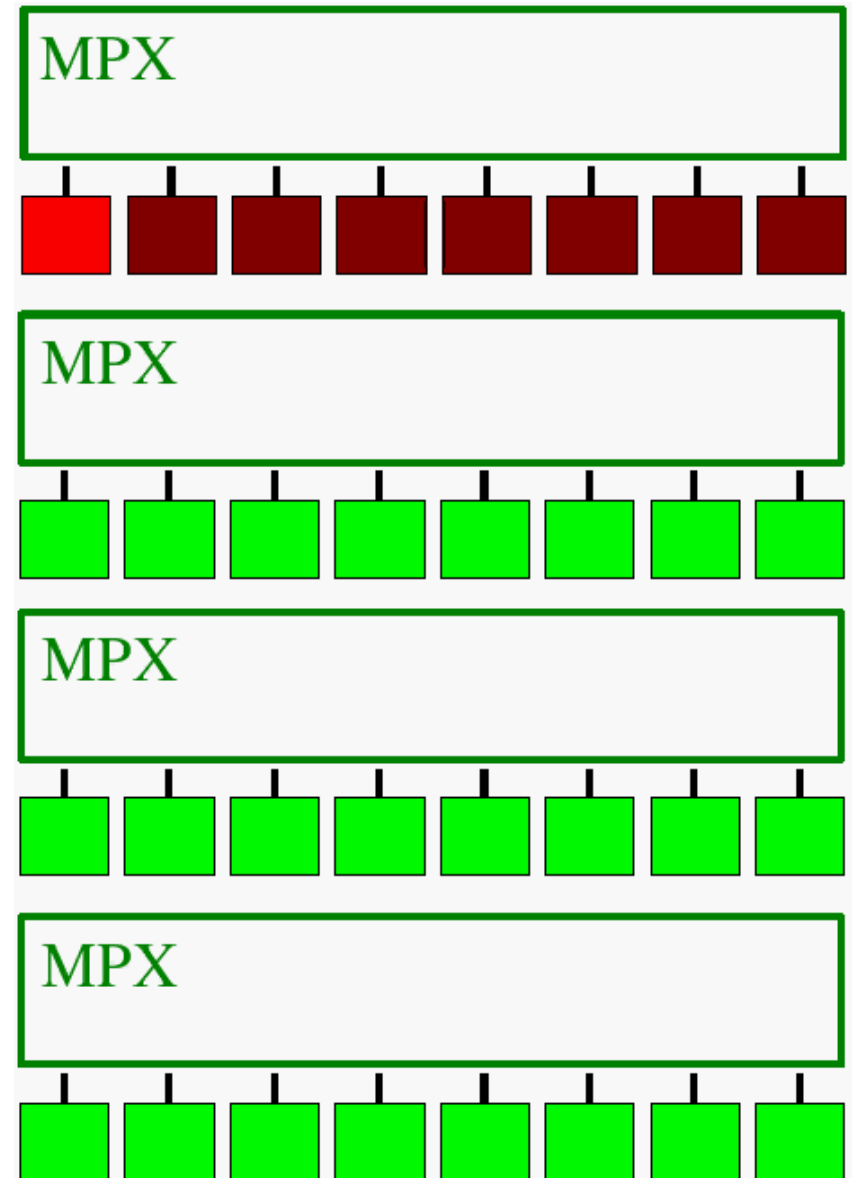# Hybmon, the Movie

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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Hybmon, the Movie

The cast and crew:

Burn-in pattern

$\Rightarrow$ Current/Voltage measurement
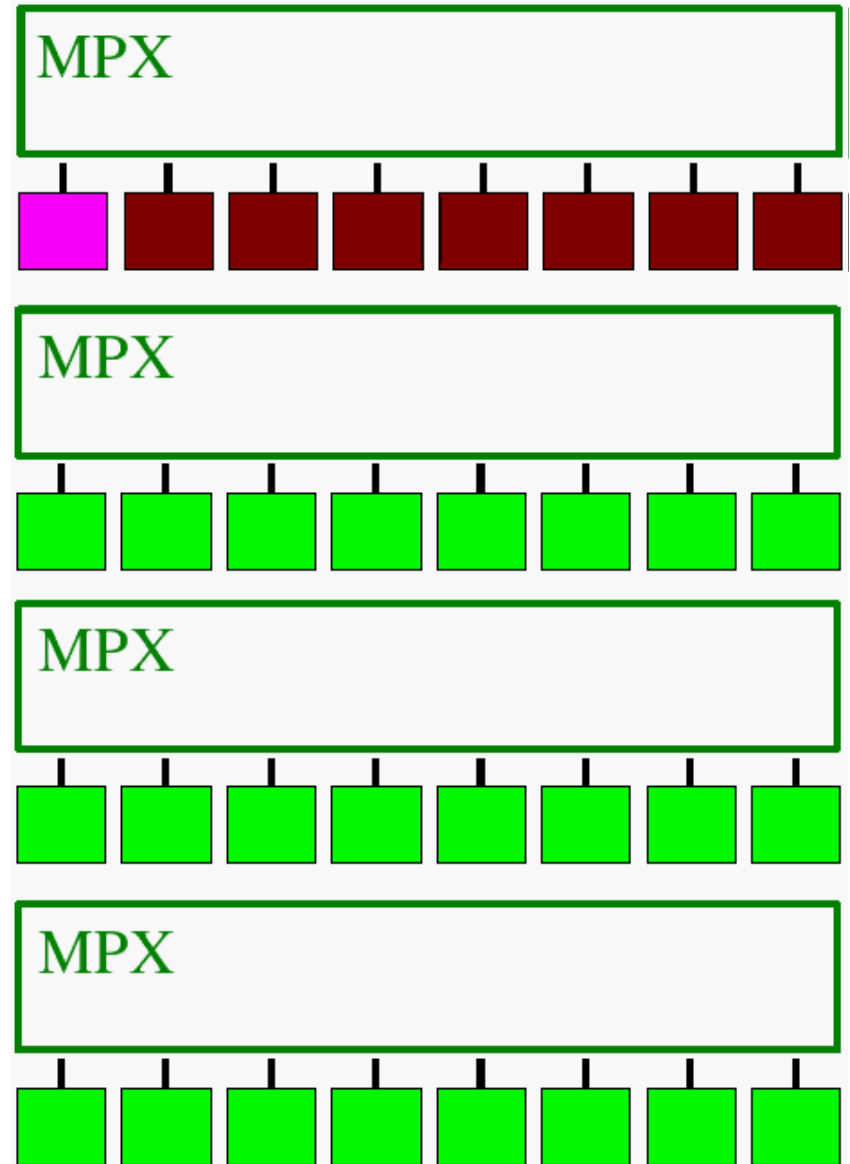
Readout integrity check

Htest

Receiving same pattern
as hybrid under test/check

(click figure to view; time is not to scale)

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MPX

MPX

MPX

MPX

Hybmon, the Movie

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Burn-in pattern

Current/Voltage measurement

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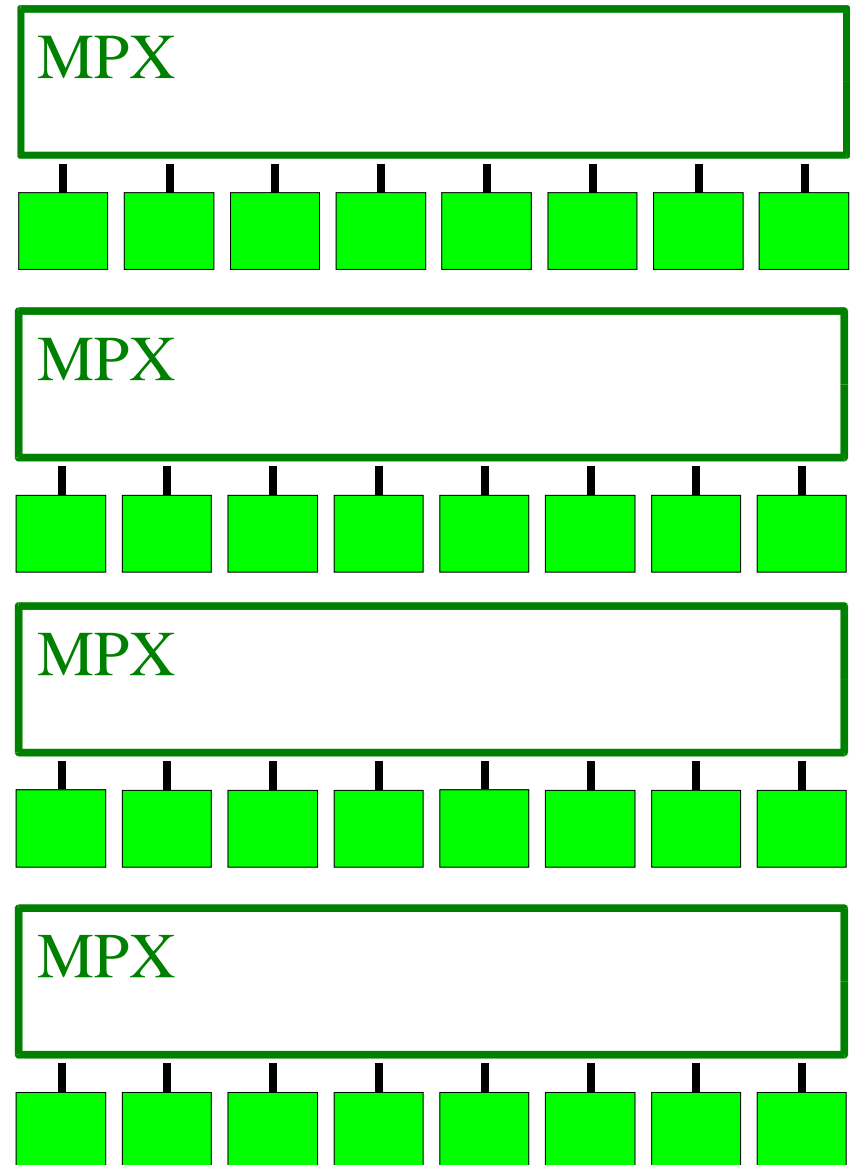
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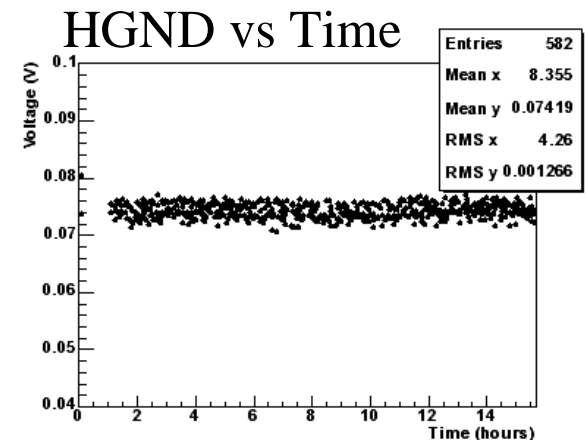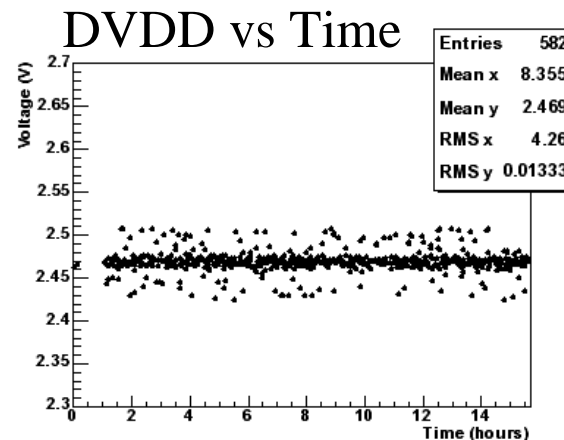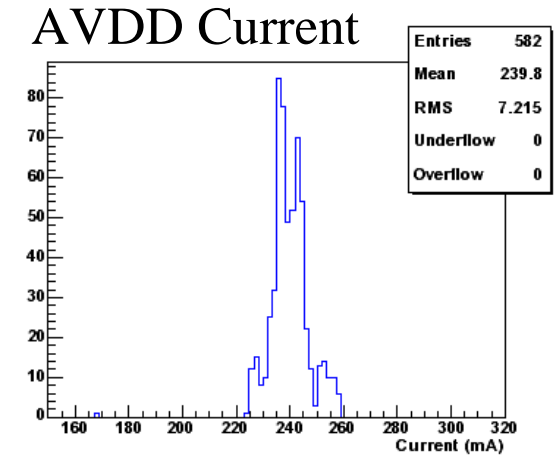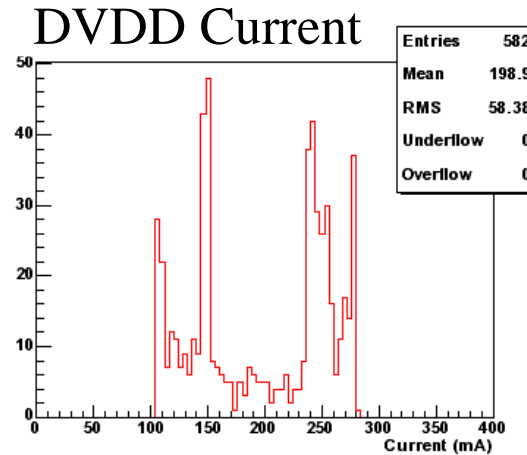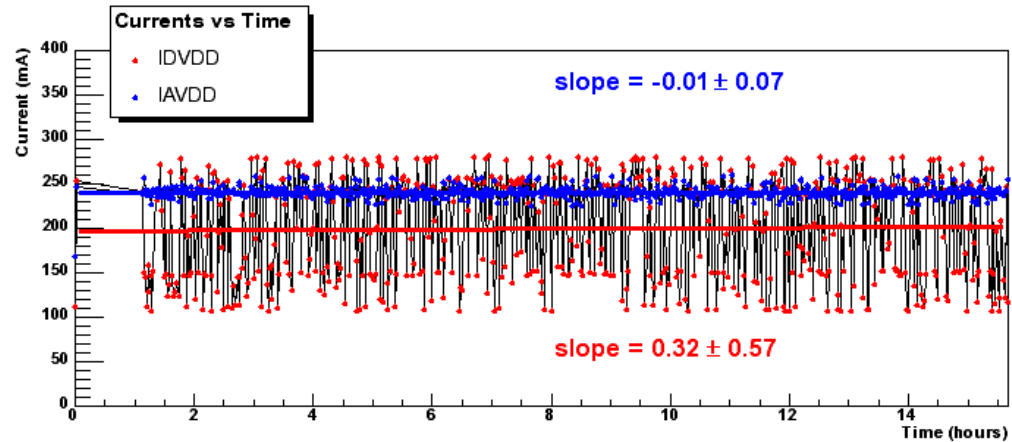
(time is not to scale)

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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

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