



Hybrid Testing

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- Status of assembled hybrids
 - ◆ L1
 - ▲ 18 received / 12 assembled / 9 working / 7 good
 - ▲ Used for
 - One L1 module with ELMA sensors
 - Two L0 modules with ELMA sensors
 - ◆ L2A
 - ▲ 23+15 received / 12+2 assembled / 7-8 working
 - ▲ Two CPT hybrids with 2.5 mm connectors will be used for the first stave electrical prototype
 - ◆ L2S
 - ▲ 24 received / 2 assembled with 2.5 mm connectors
 - ◆ Plans
 - ▲ Assemble 8 L2A and 8 L2S CPT hybrids at stuffing houses
 - Waiting for tested chips



Hybrid Testing

- Status of testing

- ◆ Universities

- ▲ KSU, KU, UIC & NWU have hybrid stands (6 hybrids total)
- ▲ Fresno should have one soon
- ▲ KSU has full chain stand with SASEQ

- ◆ Fermilab

- ▲ 5 SASEQ stands up and running, one full chain stand
- ▲ All hardware ready to start long-term burn-in
- ▲ 1% stand running



Hybrid Testing

- Things work ok in general
 - ◆ Hybrids behave similarly to standalone SVX4
 - ◆ There are configurations when full chain operates with no corruptions and low noise
 - ◆ However there is a number of mysteries/miracles we need to understand
 - ▲ Outcome may affect the chip and hybrid designs - receiving highest priority
 - ▲ Some of these effects were not checked /seen for standalone SVX4 - may need to go back to the 14th floor setup
- Mysteries we see
 - ◆ 10 chip hybrids have higher total noise than 4-chip hybrid
 - ▲ Bad contacts through silver epoxy?
 - ▲ Currents? Bypassing? Hybrid design?
 - ◆ PA_RST timing affects the performance
 - ◆ L1A timing affects the performance
- Miracle
 - ◆ Different spreadsheets give different results
- Other issues
 - ◆ Bookkeeping - waiting for DB, using web page & paper travelers
 - ◆ Hybrid debugging needs help (ET & student)