# Silicon Detector:
## Simulation & Reconstruction

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# Validated!

- Just barely:
  - Events generated at last minute by one individual.
  - Extremely unrealisitic detector design used for the physics benchmarking studies.
  - Events processed through simulation and reconstruction chain only because of herculean efforts by three people.

- Now what?

# Work plan after validation till 2012

- "Develop a realistic simulation model of the baseline design, including the identified faults and limitations."

- An improved detector design (sidloi) was developed for the Boulder meeting. Included polygonal, overlapping stave EMCal barrel, polygonal; wedge Hcal barrel; planar silicon tracking wafers: overlapping pinwheel barrel tracker design, castellated vertex barrel.

- Zero response from any of the subdetector groups. Was not used in the LOI.

# Work plan after validation till 2012

- "Simulate and analyze updated benchmark reactions with the realistic detector model. Include the impact of detector dead zones and updated background conditions."

- No word on any benchmark updates from the physics group, despite repeated requests.

- More realistic (but far from real) detector designs can be simulated.

- Essentially no effort remains for reconstruction effort.

# Work plan after validation till 2012

- "Simulate and study some reactions at 1 TeV, including realistic higher energy backgrounds, demonstrating the detector performance."

- Yet another new machine configuration?

- Will there be any overlap with the CLIC CDR effort?

- No word from the physics group, despite repeated requests.

- Who will generate input spectra and physics and background events?

# IDAG requests

- "It should also clarify whether specific design values (e.g. the depth of the hadronic calorimeter) or figures of merit related to jet reconstruction are fully understood."

- Not clear that existing reconstruction has sufficient resolution to resolve this, especially at higher energies.

  - See PFA talk at last week's meeting.

# IDAG requests

- "The quality and completeness of the reconstruction and analysis software might be improved in some areas, clarifying further the performance and the limits of the detector concepts."
- They were being kind…

# Moving forward: Tracking

- No response on sidloi, moving ahead anyway.

- Implementing generic, simplified digitization developed for ATLAS.

- Finding strategies will have to be modified to accommodate new topologies.

- Still no effort on fitting.

  - Are results good enough as they are?

    - No evident concern about ILD/SiD higgs mass differences.

- Possible additional effort from India, UCSC, CERN & CO.

  - Not being aggressively followed up.

# Moving Forward: Calorimetry

- No response on sidloi, moving ahead anyway.
- Reconstruction will have to be rewritten to accommodate different calorimeter topologies.
  - Modify existing code or start over from scratch?

# Moving Forward: Vertexing/Flavor Tag.

- Abandoned by SiD quite some time ago.
  - For LOI, ran the ILD framework to find and fit vertices and perform jet flavor tagging.
- LCFI effort unfunded in UK.
  - Being picked up by Japanese groups?

# Testbeams?

# Summary & Conclusions

- Simulation and Reconstruction effort continues to suffer from reduced effort through evaporation, attrition and layoffs.

- Barely scraped by the LOI elimination process due to the extreme efforts of a very few individuals.
  - Essentially no groups left.

- I do not see how we can deliver on the next round of required analyses with the current resources.

- Comments?