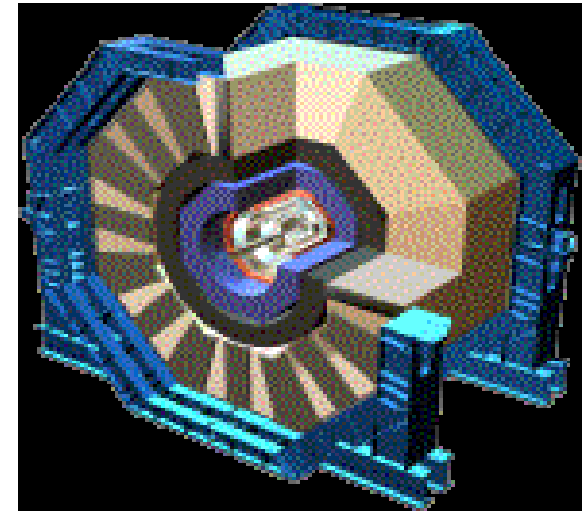




Introduction to SiD; Preparing for a LOI

Mark Oreglia
University of Chicago
With special guest appearance:
Tony Johnson, SLAC

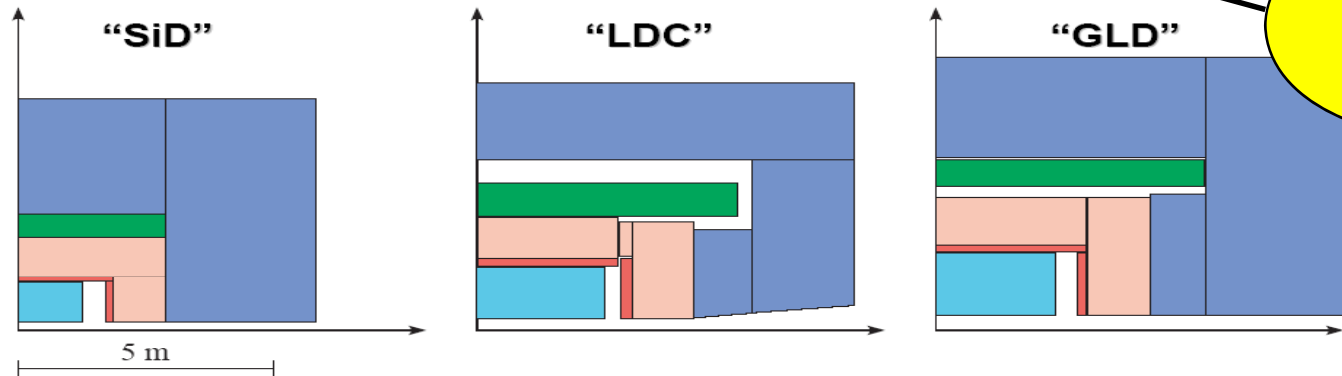


- Quick overview of SiD
- Charge to SiD speakers
- Substance of the call for LOIs
- What we learned from the DOD
- The SiD LOI effort
- SiD website update
- SiD Document database



The Silicon Detector

■ Three detector concepts



Don't call it "sid"

- Main Tracker
- EM Calorimeter
- Had Calorimeter
- Cryostat / Solenoid
- Iron Yoke / Muon System

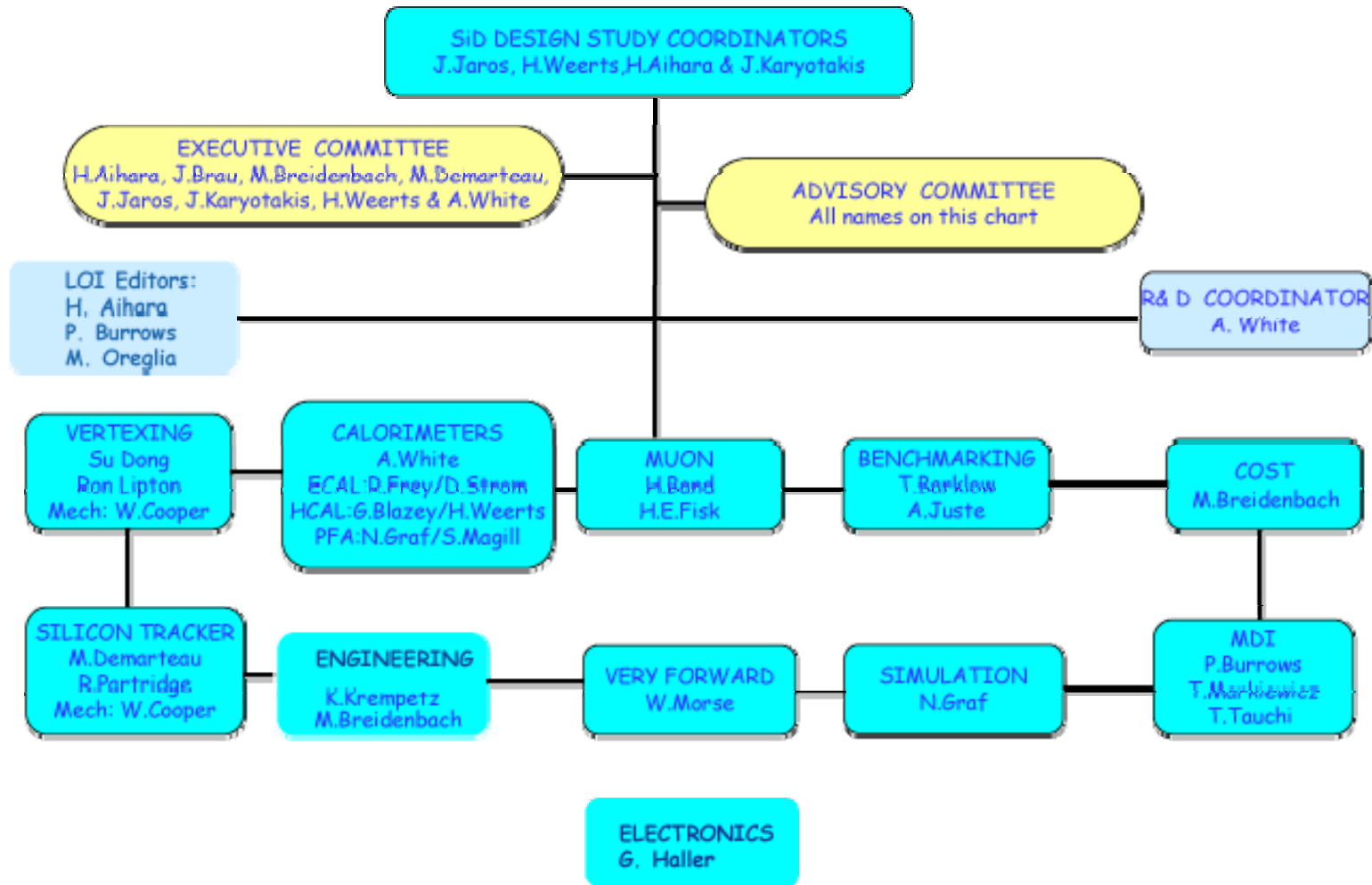
- SiD: Silicon Detector SiD: **B R²**
- ■ Small, 'all' silicon
- LDC: Large Detector Concept LDC: **B R²**
- ■ TPC based
- GLD: Global Large Detector GLD: **B R²**

Guiding principles:

- use fine granularity matched to PFA techniques
 - SiW ECAL ... small Moliere radius, but expensive
- high field solenoid to balance smaller radius
- Si tracking: low mass; best $\delta p/p$; less sensitive than gas to halo
- pixel vertex detector
- hermetic, integrated design



SiD Organization





Where to find information

- The SiD website:
 - <http://www-sid.slac.stanford.edu/>
- You will find a database of talks, papers, workshops, and phone meetings
- Tony Johnson is making some changes, and he will tell you about that next



The ALCPG07 SiD Sessions:

- Two sessions are available to SiD:
 - 8h30-noon, Tuesday, 23 October
 - 13h15-17h30, Friday, 26 October
- We need these sessions to:
 - set schedule for LOI preparation
 - review status of subsystems
 - set milestones and assess R&D
 - review manpower and pace
 - Determine (or at least discuss) how to select subsystem technologies
 - decide what will be needed (and when) to make choices; identify responsible people
 - Discuss assessment of integrated performance
 - Identify the LOI writers...or at least start

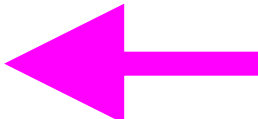
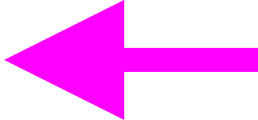


Charge to SiD Speakers

- We've got a lot to cover in little time. In order to get ready for the LOI we need the speakers on subsystem status to cover the following:
 - Summary of all technologies being considered
 - R&D in progress and needed for choosing a technology; manpower situation
 - **Make clear where newcomers can contribute**
 - activity and progress on integrating the subsystem: PFA, combined performance, benchmark reactions
 - Studies needed to provided essential information for LOI
- Speakers should think back to the Detector Outline Document and put themselves in the place of the DOD editor: what went wrong back then and what does the subsystem group need to do to be fully prepared for the LOI deadline, and for the technology choice procedure.



SiD Concepts Schedule

- Tuesday, 23rd Oct:
 - 8h30-9h00 (30m) LOI Requirements and what we need to get there (M Oreglia)
 - 9h00-9h30 (30m) SiD PFA and Simulation code (Steve Magill)
 - 9h30-9h50 (20m) Benchmark reactions (Andrei Nomerotski)
 - 10h15-10h35 (20m) VTX status (Su Dong)
 - 10h35-10h55 (20m) TRK status (Rich Partridge)
 - 10h55-11h15 (20m) ECAL status (Ray Frey)
 - 11h15-11h45 (30m) HCAL status (Vishnu Zutshi)
 - 11h45-12h15 (30m) How to make choices (John Jaros) 
- Friday, 26th Oct:
 - 13h30-13h50 (20m) muon/PID status (Henry Band)
 - 13h50-14h10 (20m) Forward systems (Bill Morse)
 - 14h10-14h40 (30m) IR and MDI (Tom Markiewicz)
 - 14h40-15h10 (30m) engineering; solenoid (Kurt Krempetz)
 - 15h10-15h30 (20m) Electronics (Gunther Haller)
 - 15h50-16h10 (20m) Optimization (M Breidenbach)
 - 16h10-16h30 (25m) Rvw LOI tasks (Harry Weerts) 
 - 16h30-17h00 (30m) Discussion



The LOI Announcement

- ILCSC wants LOIs by 1 October 2008
- Goal is to facilitate two reference designs for TDR; as I understand it:
 - new Research Director (Sakue Yamada) and the yet-to-be-named IDAG play a big role here
 - assess feasibility of groups (ie, critical mass)
 - review R&D work in progress and needed
 - possibly help interested parties join a detector concept
- Guidelines:
 - <http://physics.uoregon.edu/~lc/wwstudy/lois/LOIguidelines.pdf>
 - *The LOI should contain information on the proposed detector, its overall philosophy, its sub-detectors and alternatives, and how these will work in concert to address the ILC physics questions.*
 - *The evaluation of the detector performance should be based on **physics benchmarks***
 - *It should contain a discussion of **integration issues** with the machine. It should be developed enough to allow a first preliminary assessment of civil engineering issues like interaction hall, support halls etc.*
 - *It should enable the reader to judge the potential of the detector concept and to identify the state of technological developments for the different components. **Alternative technological options should be elaborated.** Where needed, areas of further research and development should be identified, together with timelines and milestones.*
 - *The group submitting the LOI should define its position and role in the ongoing international research and development for a detector at the ILC.*
 - *should include a preliminary **cost estimate** for the detector.*
 - *should not exceed 100 pages.*



The SiD LOI Effort

- Hiroaki Aihara, Phil Burrows, Mark Oreglia agreed to be editors
- To meet the LOI deadline of October 1 2008, we will need a draft by September 1 (DOD experience tells us it will take a month to polish it)
 - This means demonstrating adequate performance by the start of the summer
 - R&D or testing of some alternative subsystems will not be finished ... how do we decide which system is baseline; how do we describe alternatives or cases where a decision has not been reached yet
- PFA and costing will be the difficult cases
- Triage: which physics benchmarks to have ready for LOI
 - How to put SiD's best selling points in LOI?
 - Can Exec Cttee/ LOI Editors motivate new benchmarks that highlight SiD capabilities?
- The Marty ultimatum: forgo LOI if schedule/support unreasonable?



A Likely Schedule:

<u>Date</u>	<u>Milestone</u>
10/1/08	Submit LOI
9/1/08	Begin Final Edit of LOI; complete authorlist
8/1/08	Complete LOI Draft Collaboration Review and Comment
6/1/08	GEANT4 Description Ready Performance Studies Ready Benchmarking Studies Ready
5/08	Freeze Detector Design SubSystems Fully Specified Subsystem Technologies/Alternates Selected Conceptual Engineering Designs Ready
3/08	Freeze Global Parameters First Pass Detector Design
2/08	First Pass Global Parameters
12/07	Subgroup Plans Defined Milestones and Deliverables Manpower Resources Needed



Detector Outline Document

- <http://hep.uchicago.edu/~oreglia/siddod.pdf>
- These were due summer of 2006
 - Requested by WWS to have something of substance about detectors in the Reference Design Report
- The SiD DOD is 189 pages, nearly twice the length limit of the LOI
- DOD can certainly serve as a foundation for the LOI, but changes need to be made
 - Format? MSWord versus LaTeX
 - Much more/newer work on engineering issues
 - Progress on prototypes and beam tests
- How do we address/incorporate recommendations by the WWS R&D reviews???
- But the biggest issue is demonstrating in the LOI that SiD can do the physics: PFA for SiD not demonstrated to achieve the requisite jet energy resolution yet



LOI “Collaboration”

- *In addition to a concise technical description of the proposed detector the LOI should present the **structure of the group** which is proposing the detector. The **resource needs** and their evolution in time should be presented. The LOI will not represent any formal commitment of the groups signing it to the project or the proposed detector. It should however enable the reader to judge the capacity and the seriousness of the groups to carry out the work until the EDR.*
- R&D costs...”resource needs” ... an important issue for all detector groups. The Exec Ctte needs to query the subsystem groups to report these needs to ALCPG as well as WWS/ILCSC
 - We are hoping the Research Director can work with GDE to provide additional funding to meet the TDR schedule



Documents Database Needed

- The LOI calls for backup documentation:
 - *The LOI can, but need not, refer to other documents where more technical details are given. If so these documents should be submitted together with the LOI.*
- We therefore need to make use of the CERN-based document system devised for SiD (but largely unused), or go to another system and use it. Probably no time for the latter
- ... or listen to Tony



Updated SiD web site

- Tony Johnson, SLAC

- Old SiD web site has a lot of outdated content
 - Difficult to update
- New web site
 - Easy to remember URL: <http://SiliconDetector.org/>
 - Content updated (still more to do)
 - Better integration with other ILC web servers
 - Agenda Server, Doc Server, ILC forums
 - Searchable
 - Can embed active content (e.g. Forum, news feed)
- Based on Confluence Wiki
 - Once logged in to site you can
 - Edit any page (if authorized)
 - No need to learn new tools, just use web browser, documentation built-in
 - Comment on any web page
 - Subscribe to be notified of changes to any page
 - Create “news items” for display on home page



<http://SiliconDetector.org>

The screenshot shows a Mozilla Firefox browser window displaying the Silicon Detector Design Study website. The browser's address bar shows the URL <http://silicondetector.org/display/SiD/home>. The website header includes the SiD logo and navigation links for [Dashboard](#), [Silicon Detector for ILC](#), and [home](#). A search bar is also present. The main content area features a central image of the detector design, with a 2D cross-section on the left and a 3D perspective view on the right, connected by a yellow line. Below the image is the section title **Silicon Detector (SiD) Design Study.** and a paragraph of text: "The Silicon Detector Design Study is developing the SiD Detector Concept for the ILC into a detailed, optimized, and fully integrated detector design. The SiD concept incorporates Si/W electromagnetic calorimetry and all-Si tracking in a detector design which attempts to optimize physics performance, constrain costs, and be robust against physics and machine backgrounds." To the right of the main content are two boxes: "Upcoming Meetings" listing "ALCPG07 at Fermilab, 22-26 October 2007" and "LCWS07 at DESY, May 30 - June 3, 2007", and "ILC Newsline" listing "ILC NewsLine - 18 October 2007". A left-hand navigation menu contains links such as Home, SiD Org Chart, Meetings, Monthly Collaboration Meeting, Weekly Meetings, Web Site, Recent Updates, Index, Search, Upcoming Events, Most Recent Events, Previous Events, Documents, Simulation, SiD Detector versions simulated, Working Groups, Drop Box, Page Operations, and Browse Space. The footer of the website states "Powered by Atlassian Confluence, the Enterprise Wiki. (Version: 2.5.8 Build:#814 Oct 02, 2007) - Bug/feature request - Contact Administrators".

M. Oreglia, SiD @ ALCPG07, 23 Oct 2007



Search

Search - SiD - Mozilla Firefox
http://silcondetector.org/display/SiD/Search

SILICON DETECTOR DESIGN STUDY
Welcome Tony Johnson | History | Preferences | Administration | Log Out

Search the SiD Web Site
Searching Silicon Detector for ILC

Search the ILC Document/Agenda Server
cassell Search

ILC Document Server: Search Results - Mozilla Firefox
http://ilcdoc.linearcollider.org/search?p=cassell

ILC DOCUMENT SERVER
Search Submit Personalize Help

Search Results

Search: cassell any field Search Browse
Search Tips :: Advanced Search

Search collections: *** any collection ***

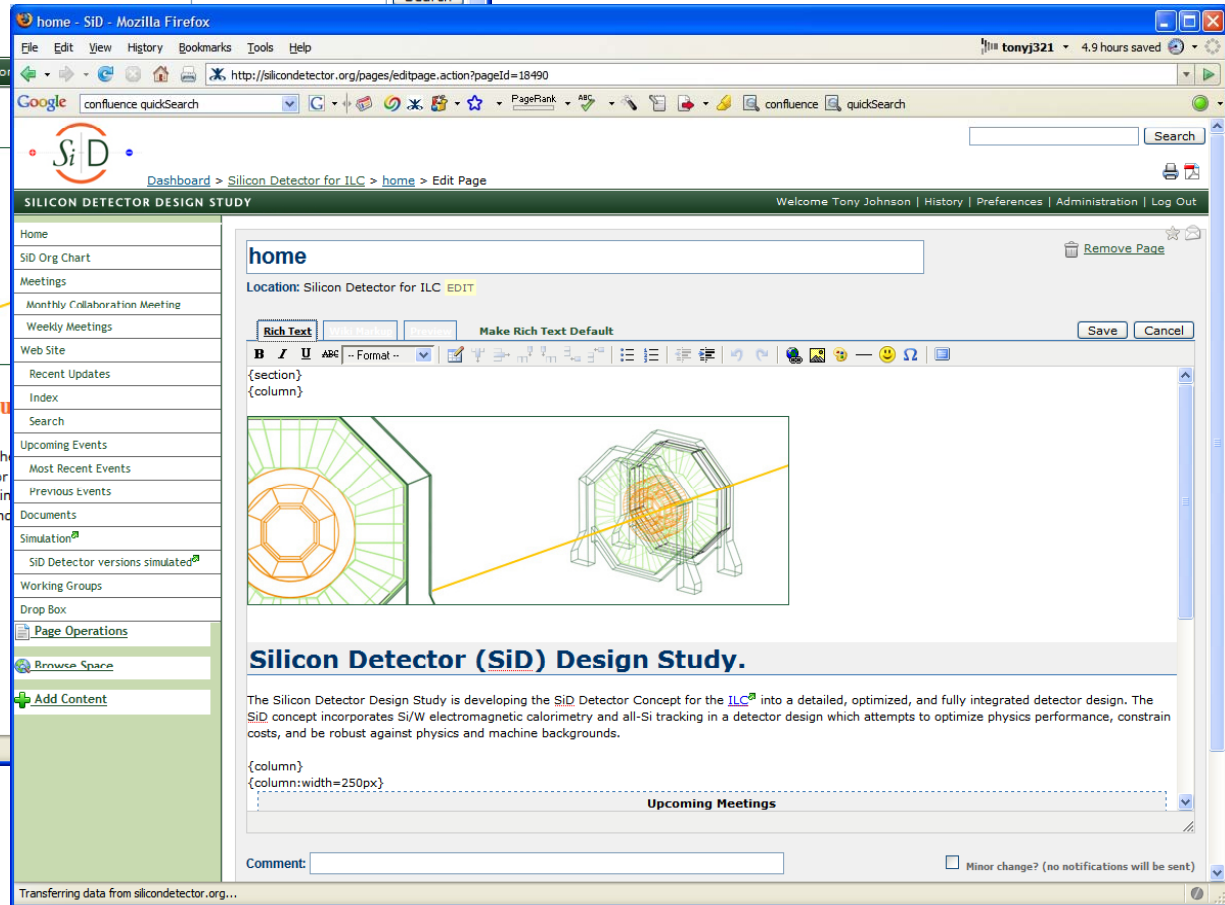
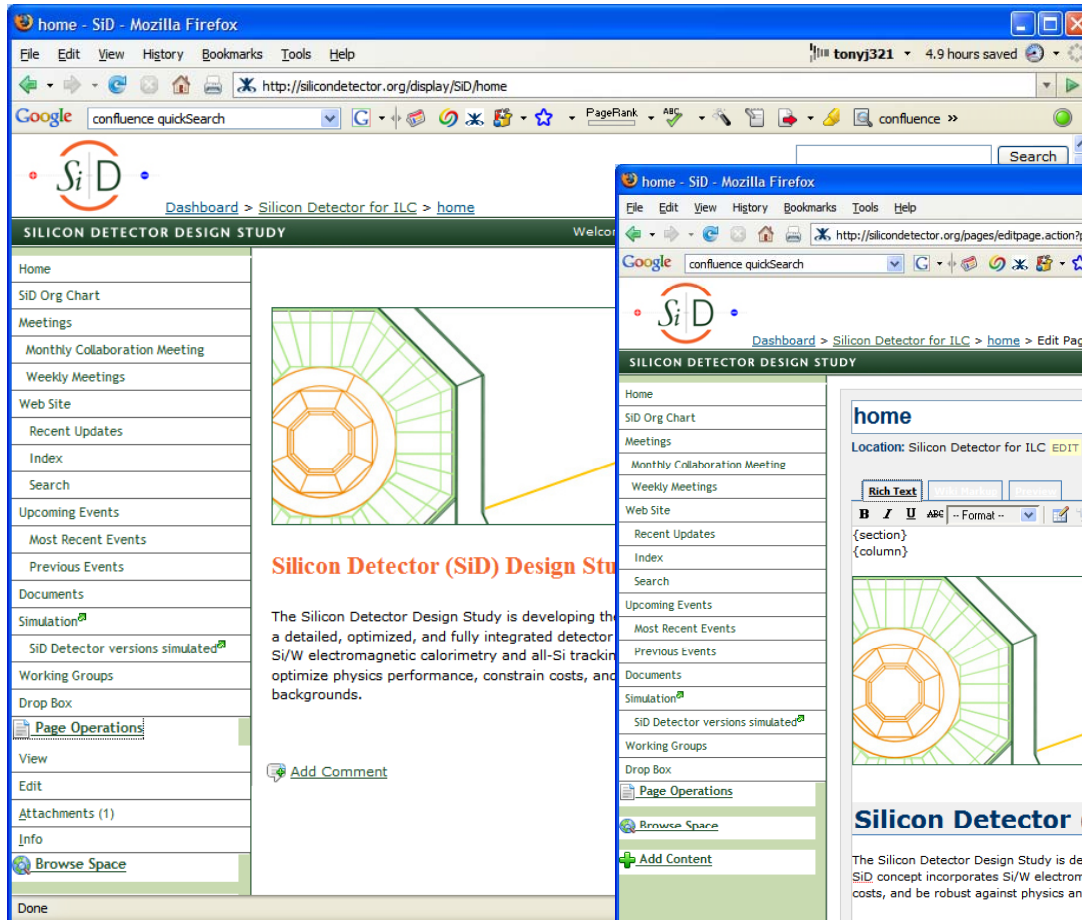
Sort by: latest first desc - or rank by Display results: 10 results single list Output format: HTML brief

ILC Document Server 23 records found 1 - 10 jump to record: 1 Search took 0.01 seconds.

1. **Updates to the CheatReconstruction**
Cassell Ron / ALCPG Sim/Reco Weekly Meeting: Backgrounds / Tue, 16 Oct 2007
[Updates to the cheat reconstruction.ppt](#)
2. **Analyzing SiD PFAs: A path for improvement**
Cassell Ron / ALCPG Physics and Detector R&D / Thu, 18 Oct 2007
[Analyzing SiD PFAs.pdf](#)
[Analyzing SiD PFAs.ppt](#)
3. **EM Cluster finding and Photon ID**
Cassell Ron / ALCPG Sim/Reco Weekly Meeting: Weekly updates / Tue, 21 Aug 2007
[Photon finding in SiD01.pdf](#)
[Photon finding in SiD01.ppt](#)
4. **HCal simulation studies**
Cassell Ron / SiD Calorimetry / Thu, 22 Mar 2007



Page Editing





Next steps

- Links to old site will be redirected to new site
- If you need a confluence account:
 - <https://jira.slac.stanford.edu/signup/>
 - Select group “SiD”
- Need more help updating site
 - Especially from the working groups