Notes from the 8/15/00 impromptu LCD meeting
to sort out what needs to be done to get
S2 and L2 working with
Gismo, fastmc
recon
and
JAS

Updated 9/19/2000

present: Tony J, Tony W, Joanne, Wolfgang, Ron, Gary

PROBLEM: The Stdhep standard assumes mm for units for vertex locations and Gismo expects mm from Hepevt events so that is ok. However, JAS assumes Stdhep units are in cm when it does event display and Fastmc.
STATUS:
SOLUTION: ?

PROBLEM: Pythia is decaying long lived particles like lambda, Ks
STATUS:
SOLUTION: Get Tim to fix it in pybms. Check that Masako is doing it right in Pandora.

PROBLEM: For S2 and L2 cal cell tags are wrong. Same for S1 and L1.
STATUS: Due to switching from costheta to theta segmentation the tagging code in recon doesn't work. Ron has written a version that works. It will be superior design strategy to change the current architecture. Now, there is a single class called Cell which does all the work. The recommend architecture is to define a Cell interface to specify the methods of all Cell classes. Then each detector type will have its own Cell class which understands its own tags.
SOLUTION: Fix it.
RESOLUTION(9/19/2000). Ron is implementing.

PROBLEM: Cal segmentation granularity variation.
STATUS: At the fall 1999 SLAC LCD meeting it was agreed that we would generate Cal hits in Gismo with very fine segmentation (0.5cm x 0.5cm?). Then there would be recon methods that can combine these fine cells into a larger cell size as desired.
Added note from Tony Waite: `If this is still how I left it, then the finest possible segmentation is governed by the tag encoding. These are not lengths but angles. I allowed 2**11 bins in phi (0-2pi) and 2**10 bins in theta (-pi/2 to pi/2). Thus the smallest representable tile subtends a solid angle of 3mrad x 3mrad at the IP (OK so it's really 3.06796... mrad!). I leave it up to you to calculate the tile sizes in your favourite calorimeter!!`
SOLUTION: This is a bit of work and will not be done before Fermilab. If different cell sizes are required in the mean time the .xml and .ini files will be set to the desired size

and event generated. The detector Cell classes described above will by design deal with whatever segmentation is defined in the .ini file.
RESOLUTION(9/19/2000) A design has been worked out and some of the implementation issues identified. Perhaps it will be implemented in time to use for Fermilab meeting.

PROBLEM: Detector version nomenclature.
STATUS: Some inconsistency over names.
SOLUTION: The Sitges versions will be called Large and Small. These use costheta segmentation of the cal. The S1 and L1 versions are the Sitges design except updated for .xml and with some fixes such as using theta for cal segmentation. The S2 and L2 are the new versions defined at the SLAC meeting in fall of 1999.
RESOLUTION: Done

PROBLEM: Status of code versions.
STATUS: The dev version of the Gismo code contains the .xml version. The prod version contains the .ini version. Both dev and prod contain the SIO version.
SOLUTION: None, just informational. No attempt will be made to create a new prod version before the Fermilab meeting.
RESOLUTION: Done

PROBLEM: The lifetime/wrong vertex for decay product bug.
STATUS: Ron has mostly scooped out the PROBLEM. It appears that in the LCD version of Gismo MCPrint is picking up the wrong vertex information for particles decayed by
Pythia. However, it gets the hits for the particles in the correct physical location.
SOLUTION: Ron has new information on code to look at and will consult Richard for some assistance if necessary to get a full understanding. Then he will figure out a fix.
RESOLUTION: Done. Fixed by Ron.

PROBLEM: Charged particles curve wrong way.
STATUS:Masako has noted and Gary has confirmed that charged particles are turning the wrong direction in the B field in the tracker. Masako may have made a further claim that
they are curved the right direction in the cal.
SOLUTION:Gary will check with her on this additional statement. He will come up with a fix.
RESOLUTION: Leave it alone for until we go to Geant.

PROBLEM: The SIO header has the wrong detector name.
STATUS: This may be due to a trivial problem of the wrong name being in the XML file.
SOLUTION: Ron will check to see if this is all that is wrong and fix it if so.
RESOLUTION: Done

PROBLEM: No XML for JAS Fastmc or Recon

STATUS: This is a lot of work to implement and is being postponed until we clarify our plans for detector simulation tools.
SOLUTION: The alternative is to create .ini files to match the .xml files for L2 and S2 and use the current code. Ron will create these .ini files.
RESOLUTION: Done

PROBLEM: Recon tracking rejects hits in outer layers of tracker. (Related problem in cal.)
STATUS: This problem is due to a design miscommunication between the original Gismo ini files and the JAS recon algorithms. The outer radius of the tracker in the original .ini files is not the sum of the inner radius plus all the layers which was assumed in the JAS recon.
SOLUTION: In the new .xml the outer layer radius in both tracker and cal is calculated as the sum of the layers. Thus, for consistency, the new .ini files for recon will define the outer radius of cal and tracker accordingly.
RESOLUTION: Done. Fixed by Ron

PROBLEM: Luminosity monitor hits broken.
STATUS: At the moment no one seems to use the lum so this is low priority. It may get solved automatically with the solution to the cal tagging and theta PROBLEM.
SOLUTION: Do nothing for now.
RESOLUTION: Done

PROBLEM: Generator level final state status does not make it through Gismo so user can't readily identify generator level final state particles which then interact in Gismo.
STATUS:
SOLUTION: Fix it.
RESOLUTION: Done. Fixed by Ron.