

# Friday

*Rob's editorial comments in italics.*

## SiD Tracking Meeting

The presentation at this meeting was by Sonja Hillert (Oxford) on the status of the LCFI software

LCFI = Linear Collider Flavour Identification

LCFI homepage: <http://hepwww.rl.ac.uk/lcfi/>

Slides: <http://ilcagenda.linearcollider.org/materialDisplay.py?contribId=1&materialId=slides&confId=1575>

LCFI is a collaboration to develop jet flavour tagging algorithms, using all available information including vertex info. The talk focused on the current status of the vertex information.

Notes:

- On page 3. An xy projection is shown. The tubes are really 3D tubes.
- ZVKIN exploits that fact that for the primary  $\rightarrow b \rightarrow c$  decay chain, the three vertices are almost colinear and allows the pattern recognition to include 1-prong decays of b or c or even of both.
  - For the specific case of  $b \rightarrow$  many prong, followed by  $c \rightarrow 1$  prong, this allows shorter decay length b's to be reconstructed than by ZVRES alone.
- Pages 7 and 8.
  - The curve labelled c is for finding charm events when all 5 flavors of jet are generated in their natural abundances
    - The natural abundance is a function of energy and is different at Zpole vs 500 GeV
  - The curve labelled c-(b-bkg) is the for finding charm when only b and c jets are present in the generated sample. This is intended to model the situation that other cuts can dramatically reduce the contamination of light quark jets for some particular analysis.
- The track parameters are supplied only at the origin. The code that swims track parameters knows about material and can subtract the beam pipe if the extrapolation crosses the beam pipe.
- SVG is their fast Monte Carlo.
- John commented that much of the vertexing technology was an evolution of SLD era technologies that were designed to work in an environment with much poorer resolution than is now available. He asked if there were efforts on fundamentally new approaches. The answer was "not yet".
- Someone asked if one can choose points in the efficiency vs background plane for separately for b and c? Or do only only get to choose one point and the other is automatically defined?
  - *I did not understand the answer. Did someone get it?*

For the short term, the plan to use the LCFI code is:

- Reconstruct tracks using our code.
  - Write the tracks to an LCIO file.
  - Run the LCFI code in its native environment.
  - Write the output in LCIO and continue using our tools.
- In the longer term we can consider porting to the code to org.lcsim.

## Discussion after the SiD Tracking Meeting

We wrote the first draft of the [Work Packages](#) page.