

To: LAR
Fr: D. A. Jensen
Re: Bo Reconstruction
Date: 23 March, 2009

I have modified the program I use to reconstruct Bo events so that it finds tracks in all 3 views. The method now used requires four contiguous hits to define a track. The track is extrapolated to search for additional hits on the track. If there is a gap of two possible hits, the track is terminated. Hits are used on only one track.

The file `evplot_270.pdf` shows the first 25 events from run 270. Signals above threshold are shown as circles, the radius being proportional to the signal height above background. The first two reconstructed tracks are shown, the first in red, the second in green. The number of tracks found is shown on the view. The chi squared for the fit to the first track is also noted on the picture. This chi squared is based on the assumption of a very good resolution - the same in all views. The cuts applied during reconstruction (windows for finding hits and so on) are not highly tuned, but are for now left very open.

The file `plsav_270` shows a number of plots from the reconstruction. The first page shows, for each view, the deviation of the confirming hits when doing a search for a starting 4 point track. Gaussian fits are superimposed. (search a $V\{1,2,3\}$) The extrapolation of the fit track to the next plane search is shown in the next set of plots (search dev $V\{1,2,3\}$) The next 3 pages of plots are the signal heights for hits on the tracks, 15 wires at a time. (wires 1 and 32 are not included as they are sets of wires at the edge) The number of tracks histograms are, as the name suggests, the number of tracks found in each view (constrained by the software to a maximum of 5). The first bin is the number of events with 0 tracks. The next plot shows the number of hits on a track. The search technique requires a minimum length of 4. Leaving out the end sets of wires, the maximum length is 30 hits. The last three pages show the deviation of hits from the fit track, again with Gaussian fits.

The program is set up to run under PAW and I use it on both the PC (`pawNT.exe` - a 5 MByte executable) and on the Mac (in a unix window). I have also compiled it on the Mac.

Clearly this is a work in progress. Much tuning remains to be done looking at a number of runs. Study of the complex events is under study. If there are things that would be useful to study further, let me know.