Can we tag on SVT at L2?

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- SVT has been producing fitted tracks since April
- Resolution has improved, fake rate decreased, as we made improvements. Now $\sigma \sim 50\text{-}70\mu m$
- A few technical problems remain:
  - Need to limit number of tracks, e.g. via Track Fitter χ^2 cut (trivial)
  - Need to correct for beam spot (straightforward, but some work; discussion at end)
  - Need to solve XTRP synch problem (show-stopper, but intensive effort underway)
- We are confident SVT can provide good tracks for L2 tagging by September; we should try to make use of the output downstream
  - Early debugging of highest-BW trigger path
  - Exercise L2, e.g. every owl shift
  - Once we cut => enriched sample to study tails, reduce rates
  - Provides pressure to move both SVT and L2 into "production" state, similar to transition made by SVX after last shutdown

- Suggested plan:
  - SVT sends fake tracks to L2, starting now
  - TrigMon checks SVTD, TL2D data (BC+tracks), make sure OK over a long period (days)
  - Implement impact-parameter code in Alpha
  - Implement options in trigger table GUI
  - L2 tags on fake tracks (pick whichever single SVT trigger is easiest to code in Alpha)
  - Debug upstream/downstream of SVT/L2 cable in parallel
  - When both ends are thought to be working, we switch over to real tracks, repeat checks
  - This should give us a working impact-parameter trigger at the earliest opportunity
  - Provides an early stress test of the trigger’s most complex data path
  - Ensures that software is in place by the time the hardware is ready

- About the beam spot:
  - Luciano's beam fitter already runs in VME CPU (b0svt06) to fit beam spot in each of 6 bulkheads, every ~10 seconds
    - tested on replayed data during shutdown
  - Plan is to write beam position data over VME into GhostBuster board, which would apply correction to tracks
  - Correction would be updated as often as it can be reliably calculated; use double-buffering in GB so that switchover is clean
    - Start from "best guess" when run begins
  - Read out (x0,y0,x1,y1,…,x5,y5) from GB into every event, so that you always know exactly what correction was applied to a given event
  - We will have this working and tested before we turn on real data to L2
  - If disaster strikes, there are two backup options:
    - Apply correction in Track Fitters
    - Apply correction in L2 processor

- Emulated SVT, July 7-8 data