SVT Track-Based Alignment With Millepede

1. Analysis chain: red boxes - Java; green boxes - C++.

2. gemc version 4.3.0; COATJAVA 5.7.4; Tracker - end 2018.
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   ![Diagram of analysis chain]

   - gemc cosmics
   - cosmics recon
   - select type 1,2
   - mille input
   - pede binary input
   - pede misalignments
   - event recon

   geometry, track fits, residuals, derivatives

2. Simulated Type 1 and Type 2 cosmic tracks with corresponding plots.

3. gemc version 4.3.0; COATJAVA 5.7.4; Tracker - end 2018.
Selecting single type-2 event topology

1. Construct a ‘trigger’ consisting of 84 bits (number of SVT sensors) and for each event set a bit for the sensors that have a cluster.
2. Require twelve, single-hit clusters, no repeated sensors.
3. Select most frequent trigger by ‘histogramming’ the trigger values.

4. gemc version 4.3.0; COATJAVA 5.7.4; Tracker - end 2018.

5. To do: (1) Run new Tracker/COATJAVA version. (2) Insert shift in gemc. (3) Extend to other topologies.