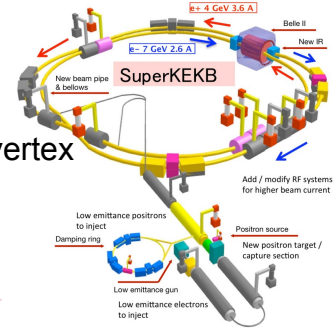
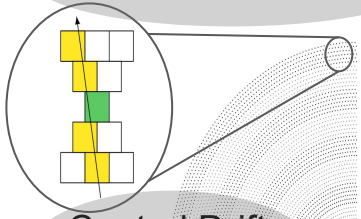
Performance of the Belle II z-Trigger under Luminosity Conditions: First Experience

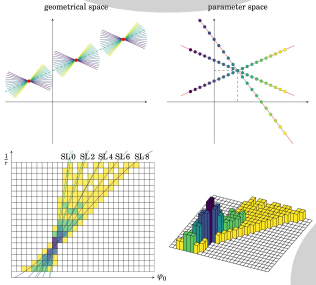
- First 3D track trigger on level 1
  (Running on FPGA within 300ns)
- Neural network used for estimating track vertex



Track Segment Finder

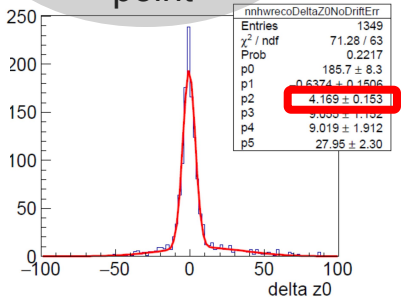


2D Finder

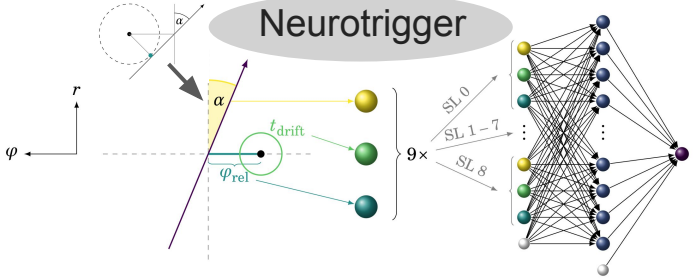


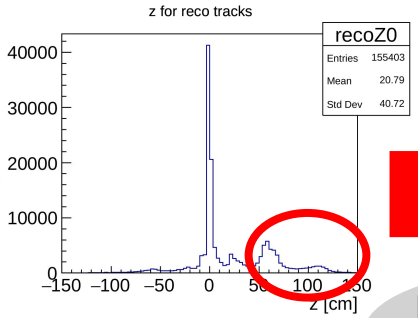
Central Drift Chamber

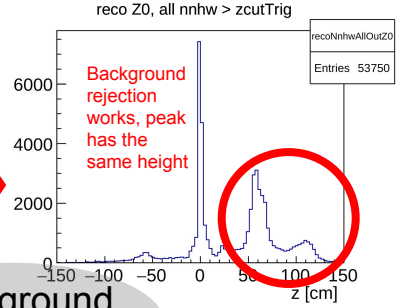
dz- Resolution for tracks from the collision point



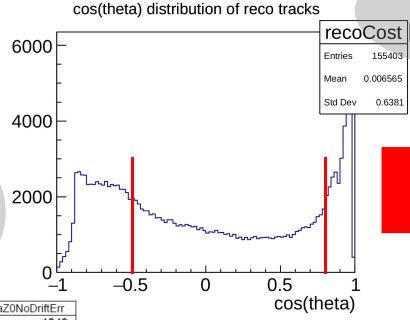
Neurotrigger

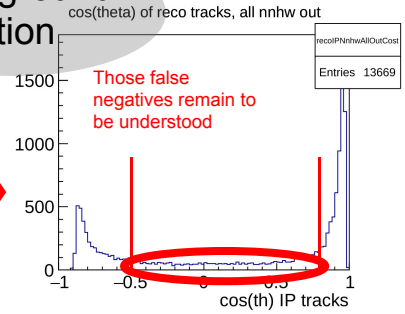






Background rejection





- Significant background reduction possible with trigger veto for tracks from outside IP
- Further analysis needed for false negatives
- Next step: implementation of 2-track triggers

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