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Vertex Reconstruction with ATLAS Inner Detector and Inner Tracker

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A rate of 60 or more inelastic collisions per beam crossing was observed during LHC Run 2 and even higher vertex density, or pile-up, is expected in Run 3 and Run 4. Efficient and precise reconstruction of the primary vertex in proton-proton collision is essential for determining the full kinematic properties of the hard-scatter event and of soft interactions. Increasing instantaneous luminosity poses a challenge for primary vertex reconstruction in ATLAS. To meet this challenge, ATLAS has developed a global approach to vertex finding and fitting, allowing vertices to compete for the association of nearby tracks. This talk will summarize the strategy and performance of this new vertex reconstruction software for Run 3, and the expected performance with Inner Tracker (ITk) upgrade for Run4.

Are you are a member of the APS Division of Particles and Fields?

No

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