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The Hybrid Seeding at LHCb

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Scintillating-fibre detectors are high-efficiency, fast readout tracking devices employed through high-energy particle physics, for instance the SciFi tracker in the LHCb upgrade. The hybrid seeding is a stand-alone track reconstruction algorithm for the SciFi. This algorithm is designed in an iterative way, where tracks with a higher momentum, which are easier, are treated in priority. With the addition of topological information and knowledge of an effective track model, this algorithm is able to deal with hit inefficiency and the tight computing constraints of the upgrade, while delivering consistently high reconstruction efficiencies across a large spectrum of tracks corresponding to the diverse physics programme of the experiment. This programme can be extended in intriguing ways by the study of very-displaced decay vertices, corresponding to dark-matter candidates or weakly decaying particles, and which can only be studied using such stand-alone algorithm.

Consider for young scientist forum (Student or postdoc speaker)

Yes

Second most appropriate track (if necessary)

Novel approaches and algorithms, and theoretical analysis

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Session Classification: Recording sessions