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Vertexing Algorithms with the ATLAS Detector for the HL-LHC Upgrade[1] IAN LIM, BEN NACHMAN, MAURICE GARCIA-SCIVERES, Lawrence Berkeley Natl Lab, ATLAS COLLABORATION — We evaluate and report on the performance of the standard vertexing algorithms used in the LHC Run 1 analyses for the ATLAS Experiment. In particular, we study the suitability of the Run 1 event categories in the high pile-up regime ($\langle\mu\rangle \sim 200$) and compare the current algorithms in terms of key metrics such as position resolution and track-vertex association. In this talk, we will discuss major features of the approaches to vertex reconstruction and their implications for vertexing in the HL-LHC upgrade, which will begin operation in mid-2026.

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