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Vertex finding and B-tagging algorithms for the ATLAS Inner Detector

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For physics analysis in ATLAS, reliable vertex finding and fitting algorithms are important. In the harsh environment of the LHC (~ 23 inelastic collisions every 25 ns) this task turns out to be particularly challenging. One of the guiding principles in developing the vertexing packages is a strong focus on modularity and defined interfaces using the advantages of object oriented C++. The benefit is the easy expandability of the vertexing with additional fitting strategies integrated in the Athena framework.

Various implementations of algorithms and strategies dedicated to primary and secondary vertex reconstruction using the full reconstruction of simulated ATLAS events are presented.

Primary and secondary vertex finding is essential for the identification of b-jets in a reconstructed event. Results from a modular and expandable b-tagging algorithm are shown using the presented strategies for vertexing.

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