

New vertexing b-tag for level-2 b-jet trigger

The b-jet trigger in ATLAS has been active since beginning of 2011. They are used to select collisions containing jets originating from b-jets. These events are used in a large range of physics studies such as searches for new physics and top quark studies. The advantage of the b-jet triggers comes from the fact that they provide potentially large rejection at both levels of the High-Level Trigger in ATLAS. The algorithm used to select, or tag, jets originating from b-quarks has been the so-called JetProb algorithm which relies purely on measured impact parameters of tracks. This summer project involves understanding and implementing an improved algorithm to identify b-quark jets by explicitly reconstructing the decay vertex of the B hadron produced in the hadronization of the b-quark. The potential for such an algorithm is large, from the offline b-tagging result we see increases of the rejection of non-b jets of around a factor of 2 for the same efficiency