Proposal on how to calibrate the Hlt Muon trigger alley

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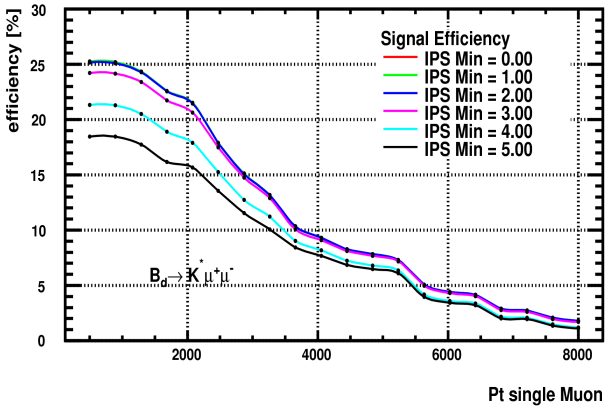
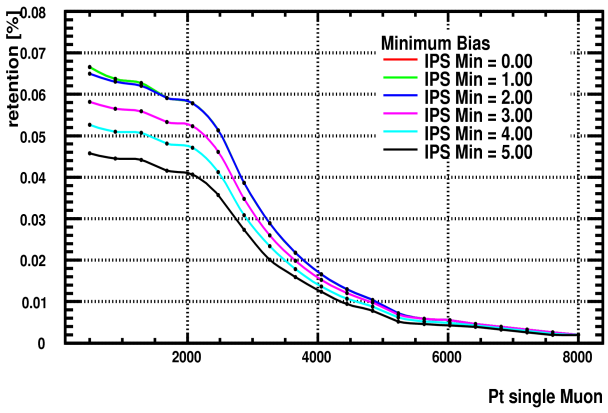
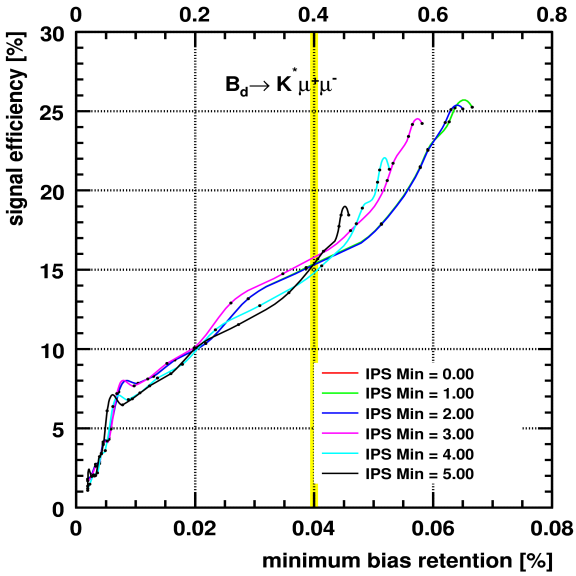
1. For trigger lines where the decision depends on more than one variable (as the Single Muon trigger), one chooses the variable on which he/she wants to tune the minimum bias retention, i.e. the bandwidth of the trigger line. In general, it should be the variable that one wants to scan in a wide range (for example, the muon Pt in the Single Muon line). I will refer to this as the main cut in the following. For trigger lines which depend on one variable, go directly to step 3.

2. The other cuts (for example, the one on the muon IPS) are adjusted by looking at the efficiencies for the benchmark channels of interest vs. the minimum bias retention, for a discrete set of the cut values (one could try IPS>0,1,2,3, or 4);

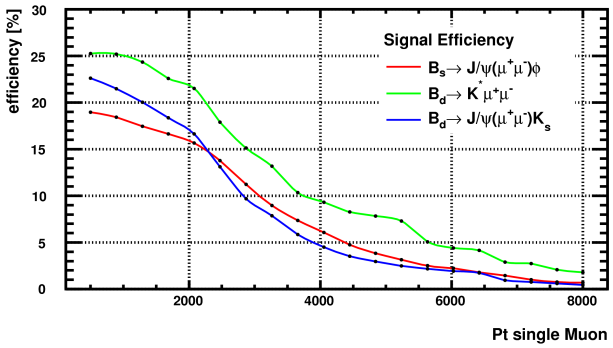


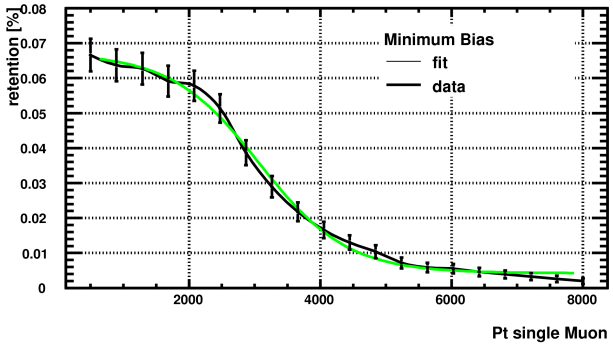


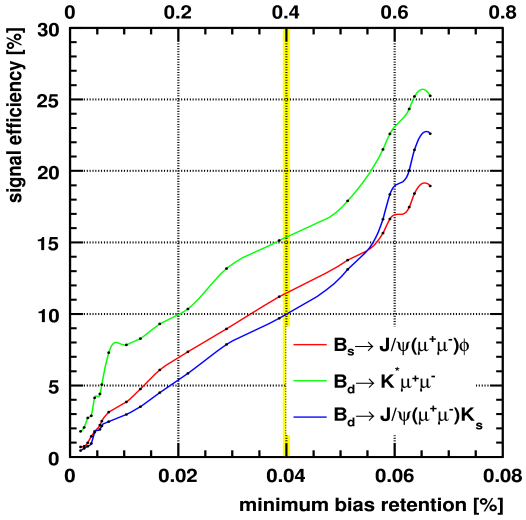


3. Once the other cuts are set, the minimum bias retention as a function of the main cut value is used to get the bandwidth range that can be filled by that particular trigger line. Within the allowed BW range,

one chooses the requested minimum bias retention (for example 400 Hz).







4. At that particular retention corresponds a certain threshold of the main variable, which can be found with a fit (Pt ~ 2800 corresponds to 400 Hz).

5. Once the threshold for all the lines have been set, once can check the overall bandwidth and efficiencies.