b-tagging

at Level-2 trigger level

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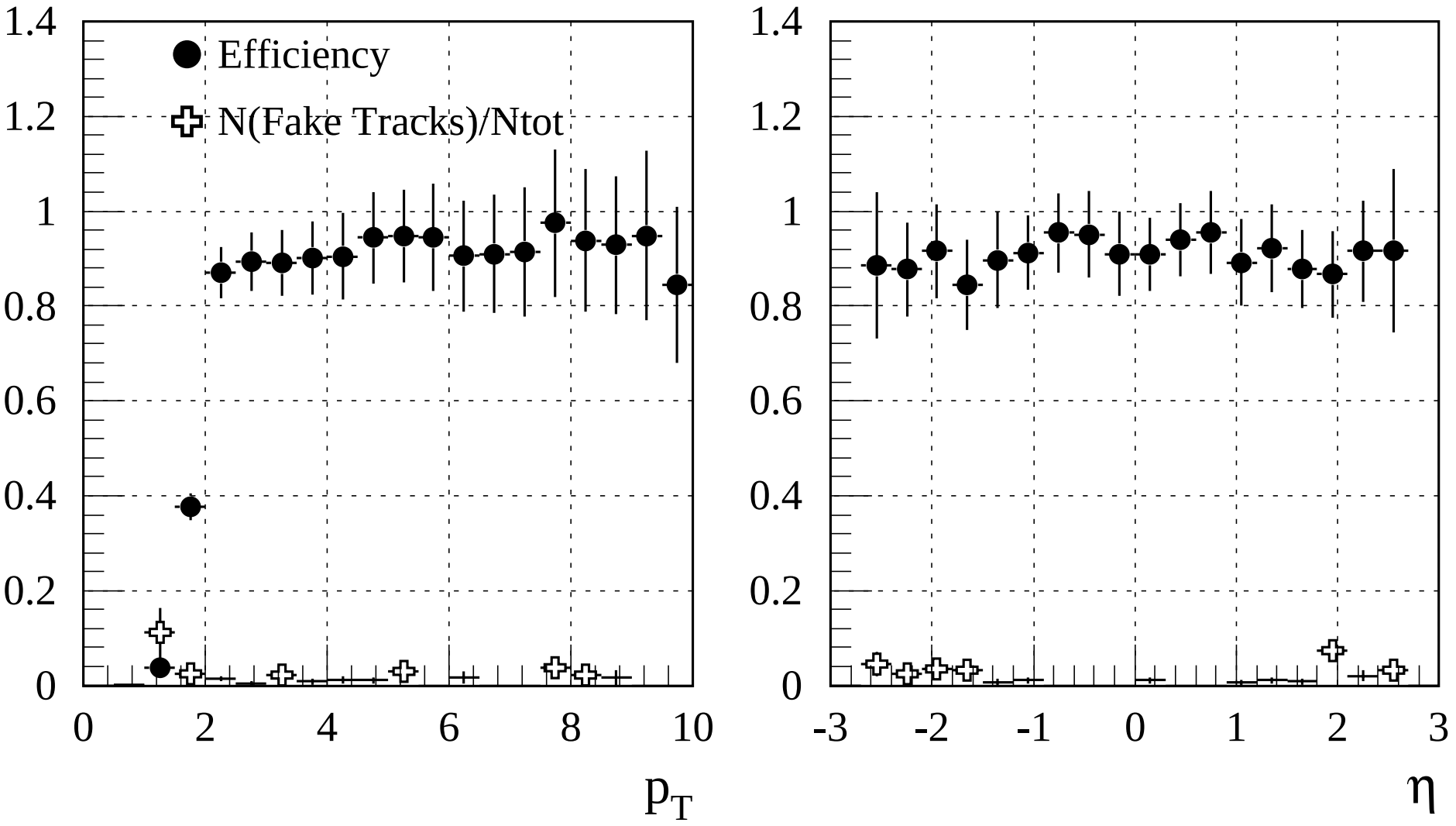
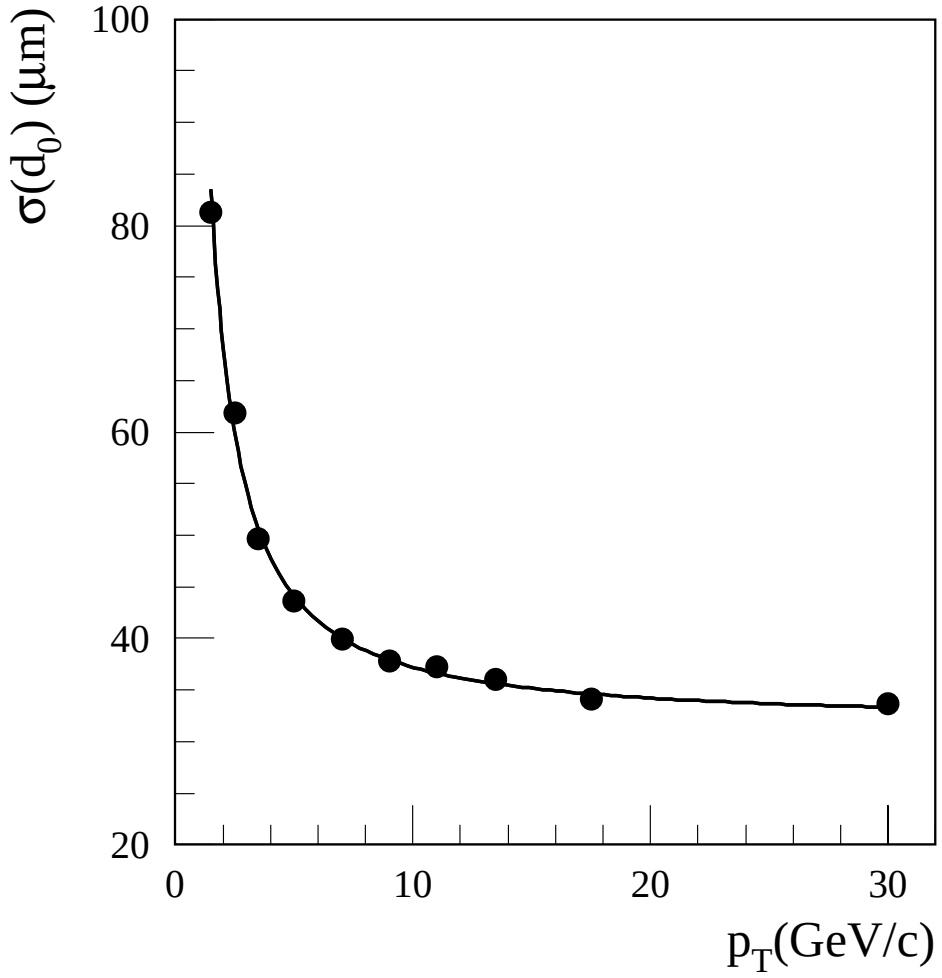
Track reconstruction

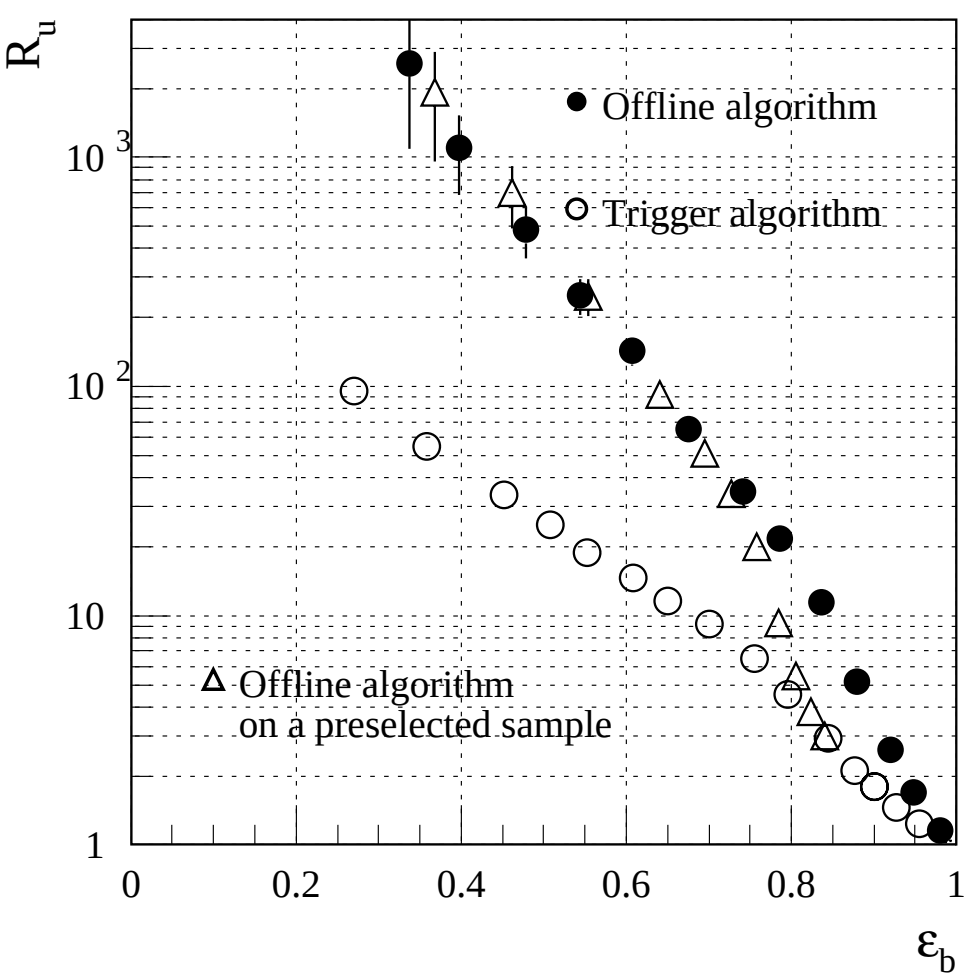
- start from jet RoI's given by the LVL1 jet trigger;
- select triplets of Pixel hits compatible with tracks:
  - coming from the interaction region;
  - within $\Delta R < 0.5$ from the jet axis;
  - with $p_T > 2$ GeV;
- remove ambiguities.

Efficiency and fakes vs p_T and η (low lum.)

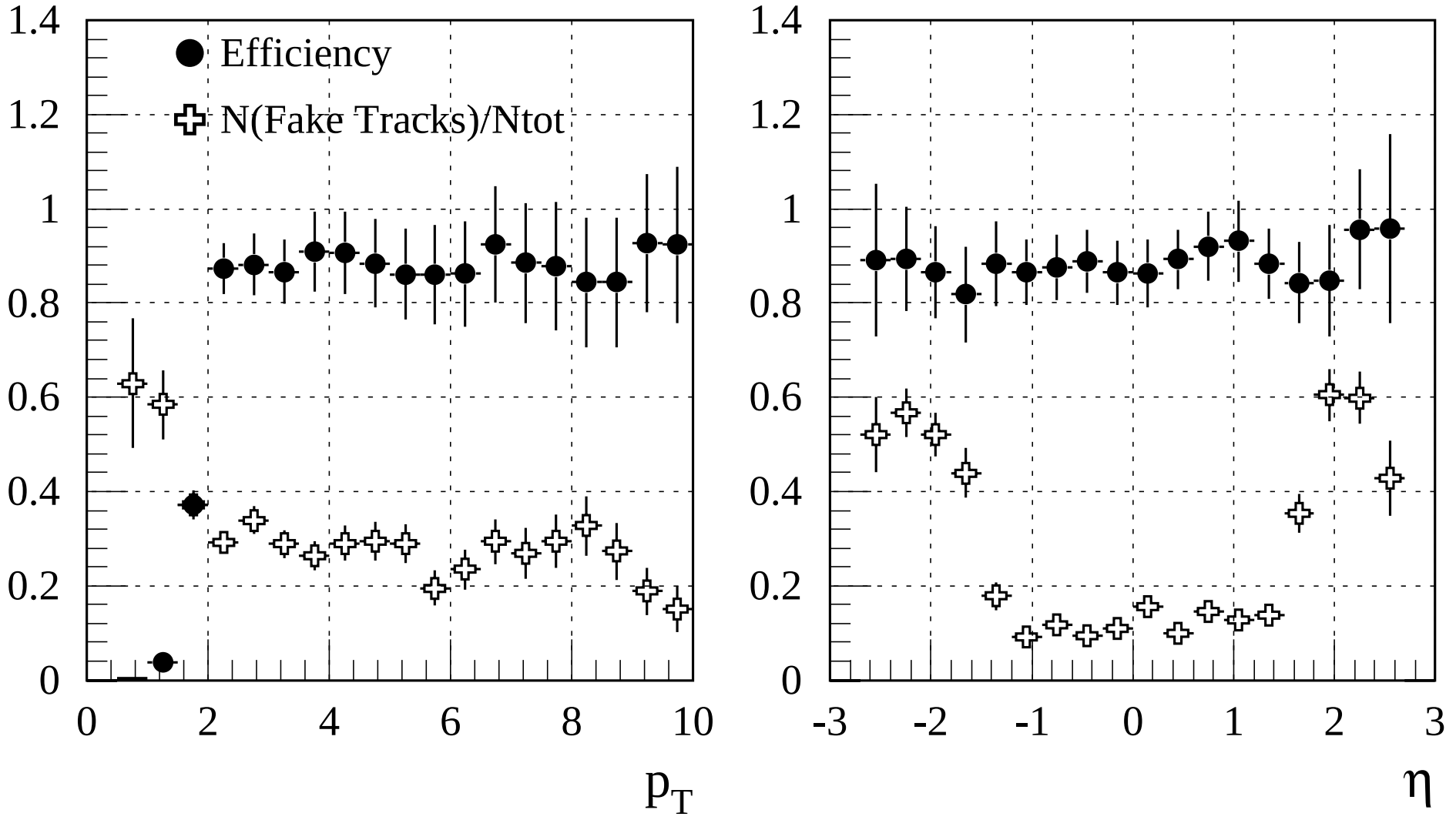


IP resolution and b-tag performance (low lum.)





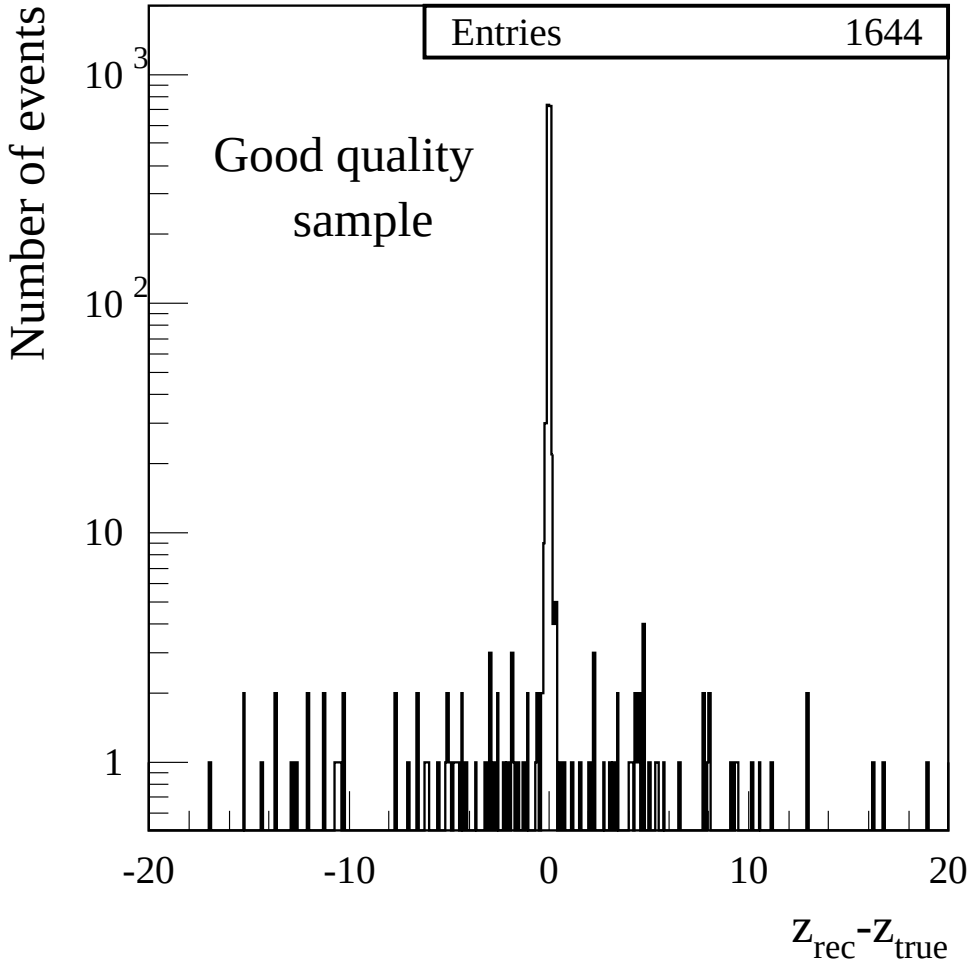
Efficiency and fakes vs p_T and η (high lum.)

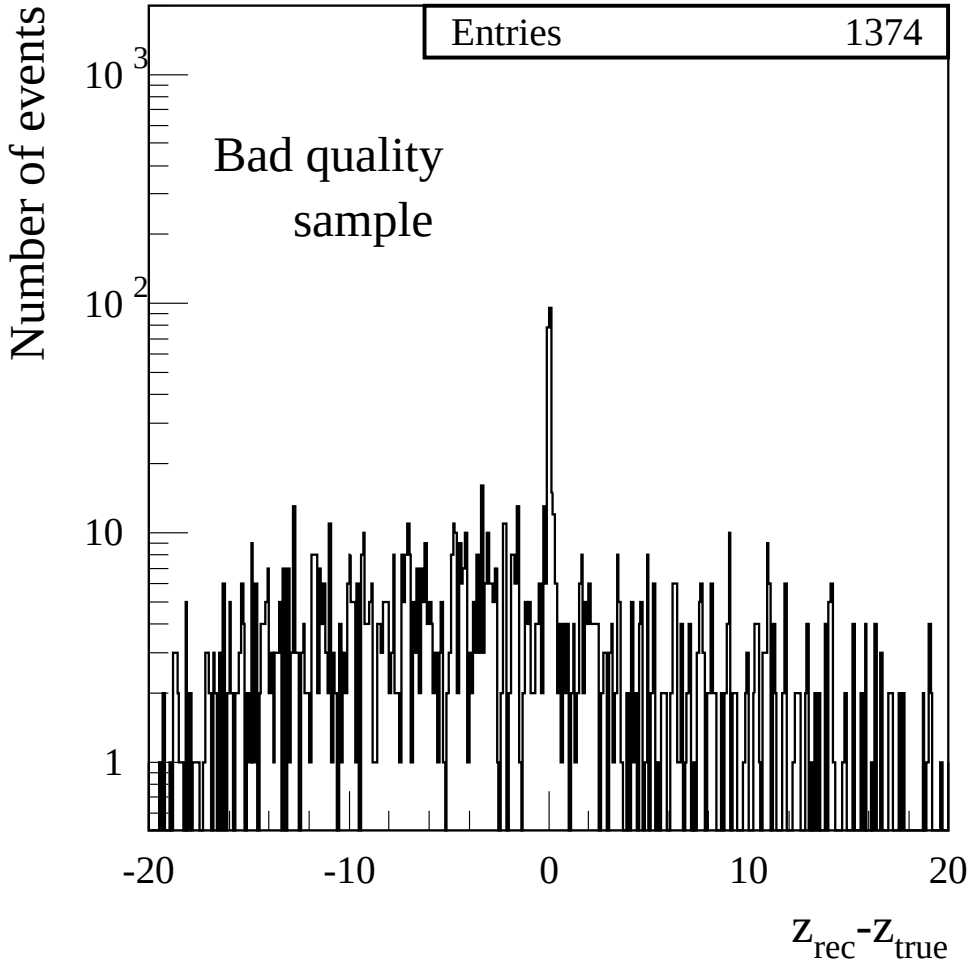


Primary vertex search at high luminosity

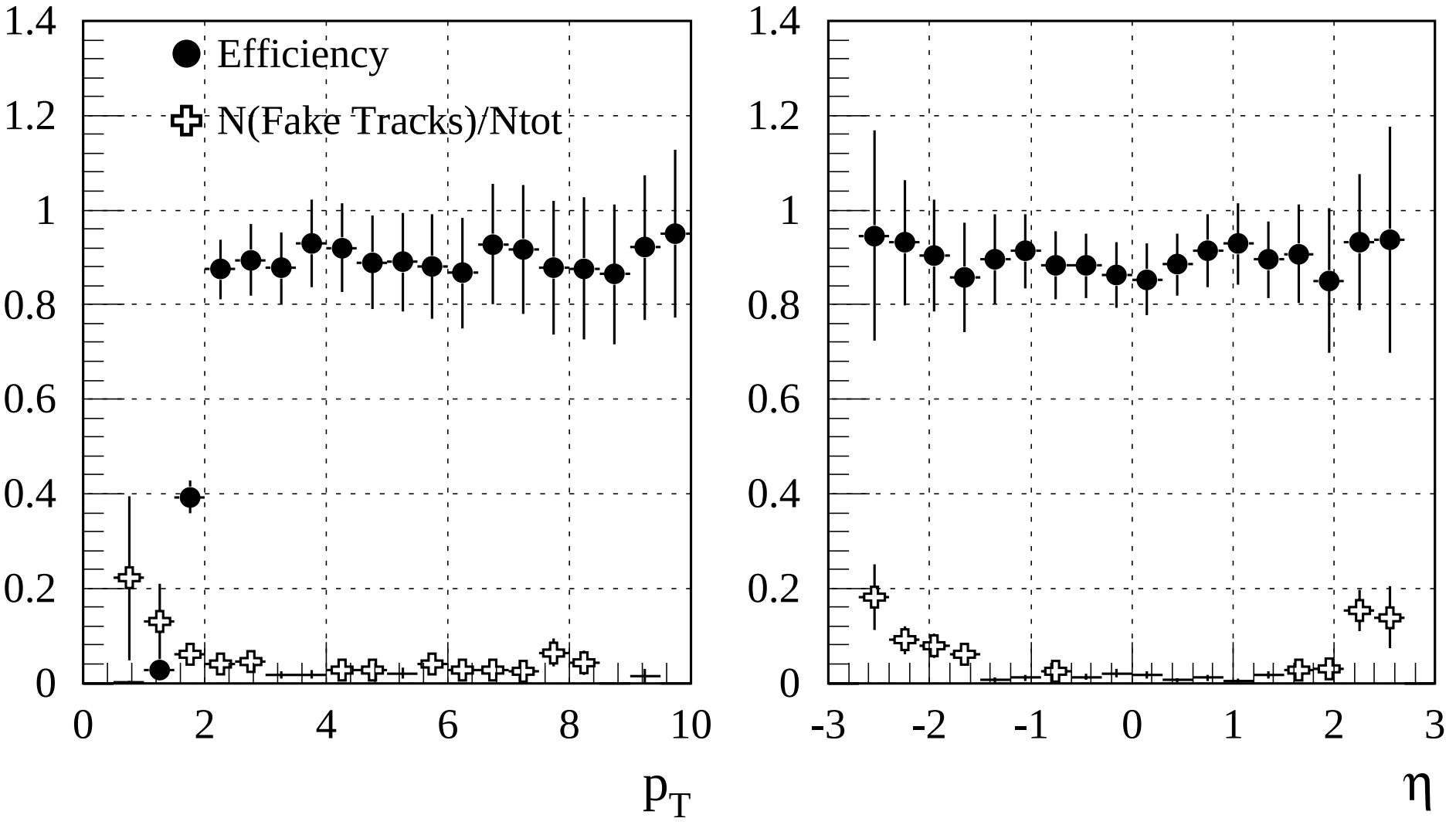
- histogram z_0 of each track in RoI in 5 mm bins;
- look for maximum over 3 bins;
- calculate z_{vtx} as weighted average (over $|p_T|$) of tracks in 3 adjacent bins;
- call the RoI “good” if more than 40% of the tracks are thus selected AND there are at least 5 tracks;
- take z_{vtx} from a “good” RoI if the current one is “bad”.

Primary vtx resolution for “good” & “bad” RoIs





Efficiency and fakes after vertex selection



b-tag performance at low and high luminosity