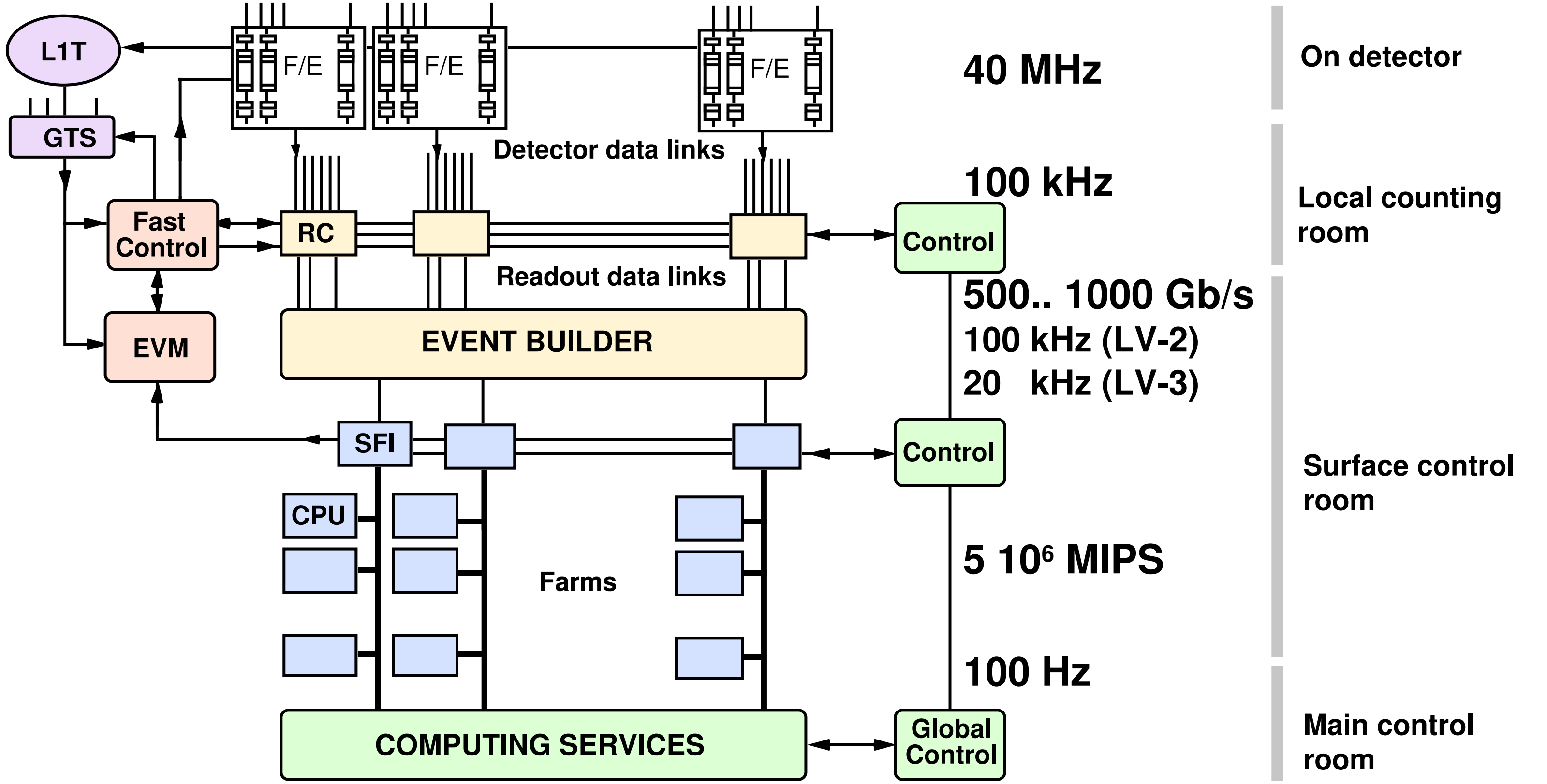
CMS Trigger & DAQ



Level-2, 3, etc. are provided by an on-line processor farm.

It can receive < 100 kHz events.

Level-1 should deliver < 30 kHz events in order to ensure a safety margin.

This bandwidth should be divided between muon and calorimeter triggers:
e.g.: 5-10 kHz for single e and single μ, 1-2 kHz for ee and $\mu\mu$, etc.

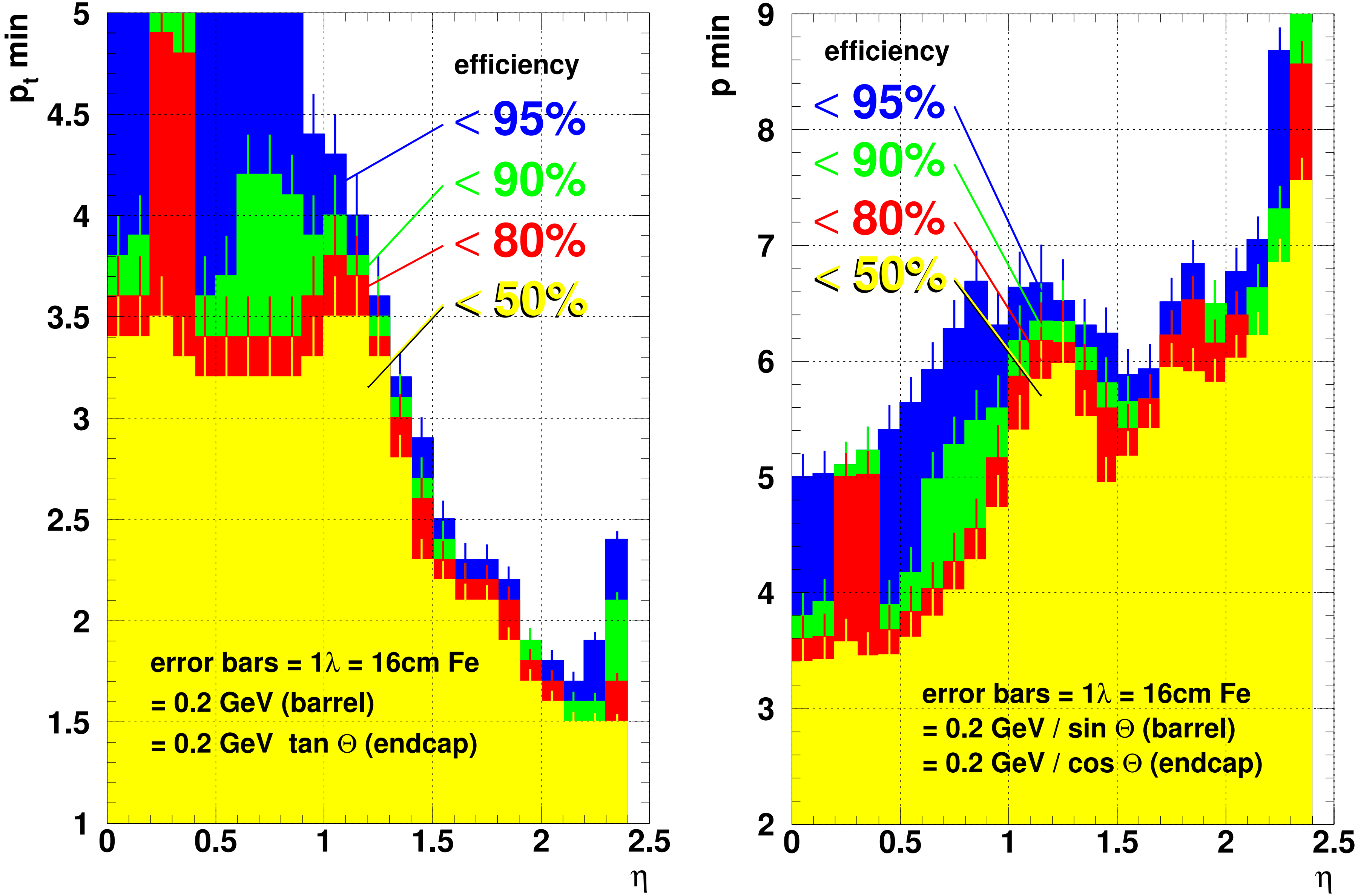
Trigger thresholds

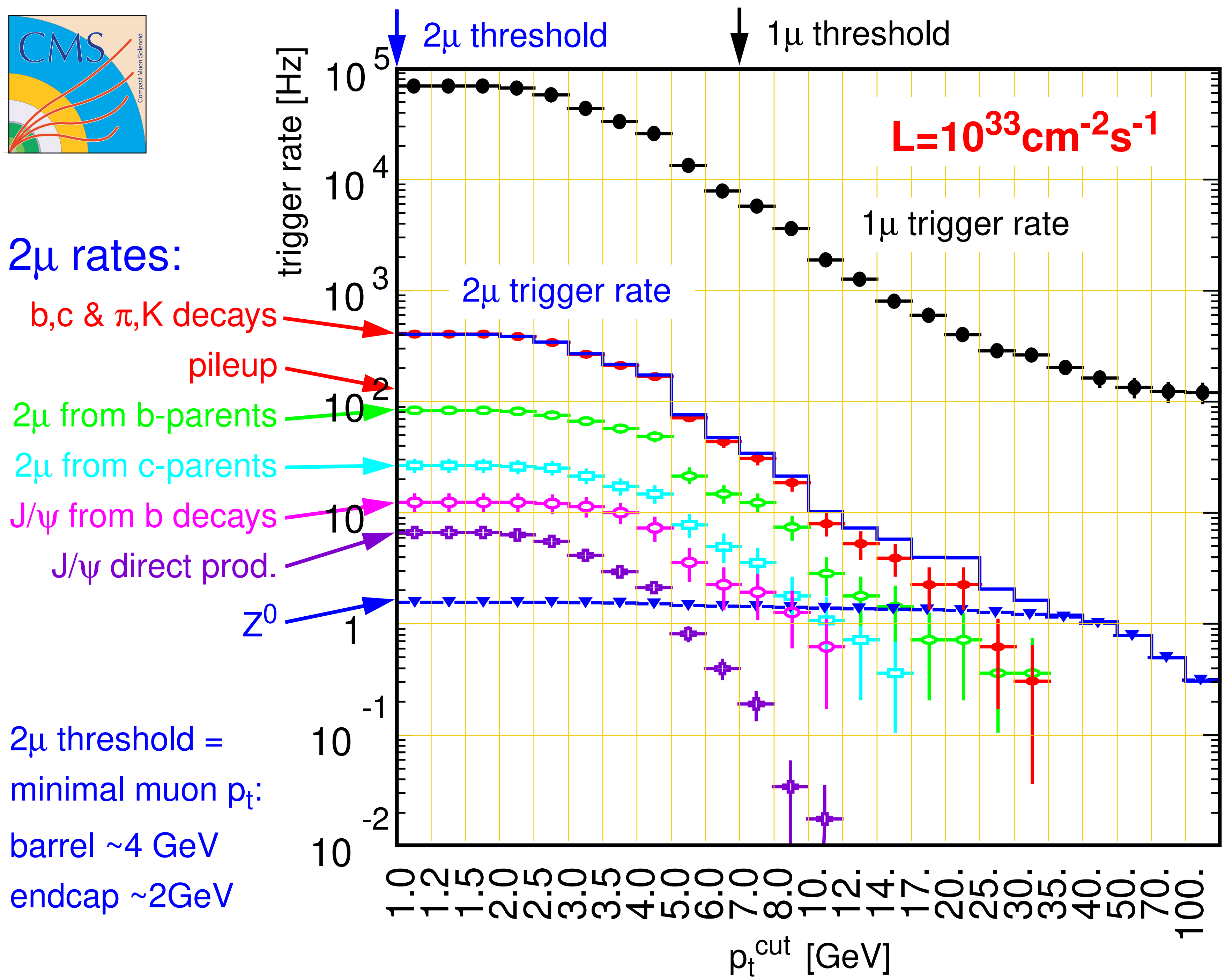
$L=10^{33}cm^{-2}s^{-1}$

trigger	threshold
1 μ	7 GeV
2 μ	2-4 GeV
μ & e_b	2-4 GeV & 4 GeV
1 e_b	10 GeV
2 e_b	5 GeV

- **"2-4 GeV" is the minimal muon p_t threshold:**
  - ~4 GeV in the barrel
  - ~2 GeV in the endcap
- **"e_b" is a trigger optimized for electrons from b-quark decays at low luminosity**

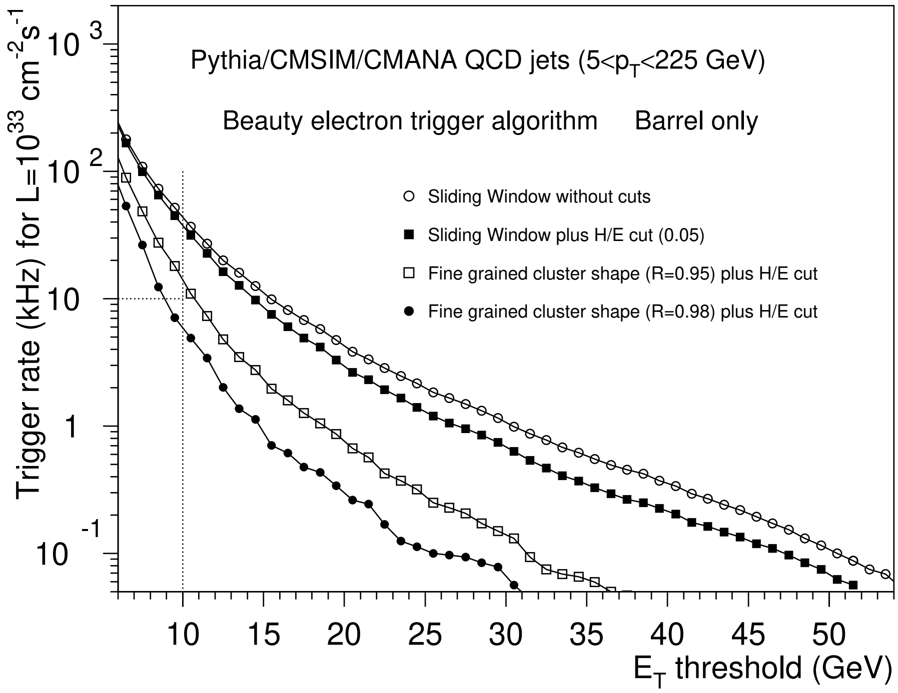
Minimal muon trigger p_t and p thresholds





2μ threshold =
minimal muon p_t:
barrel ~4 GeV
endcap ~2GeV

b-electron trigger rates



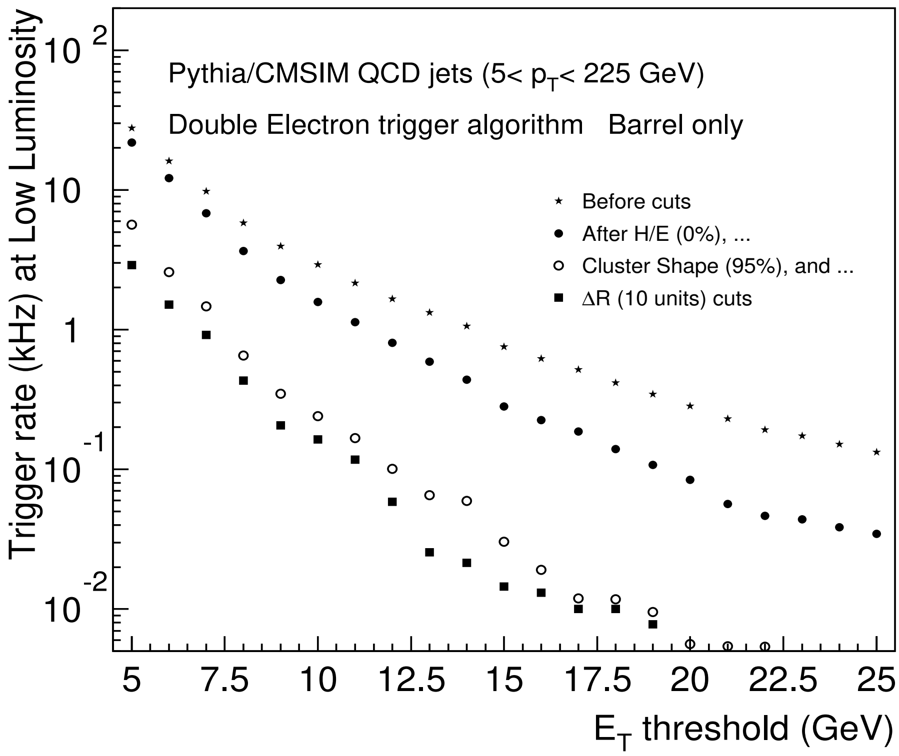
$L=10^{33}cm^{-2}s^{-1}$

single b-electron

possible cut:

10 GeV

~7 kHz



double b-electron

possible cut:

5 GeV

~3 kHz