

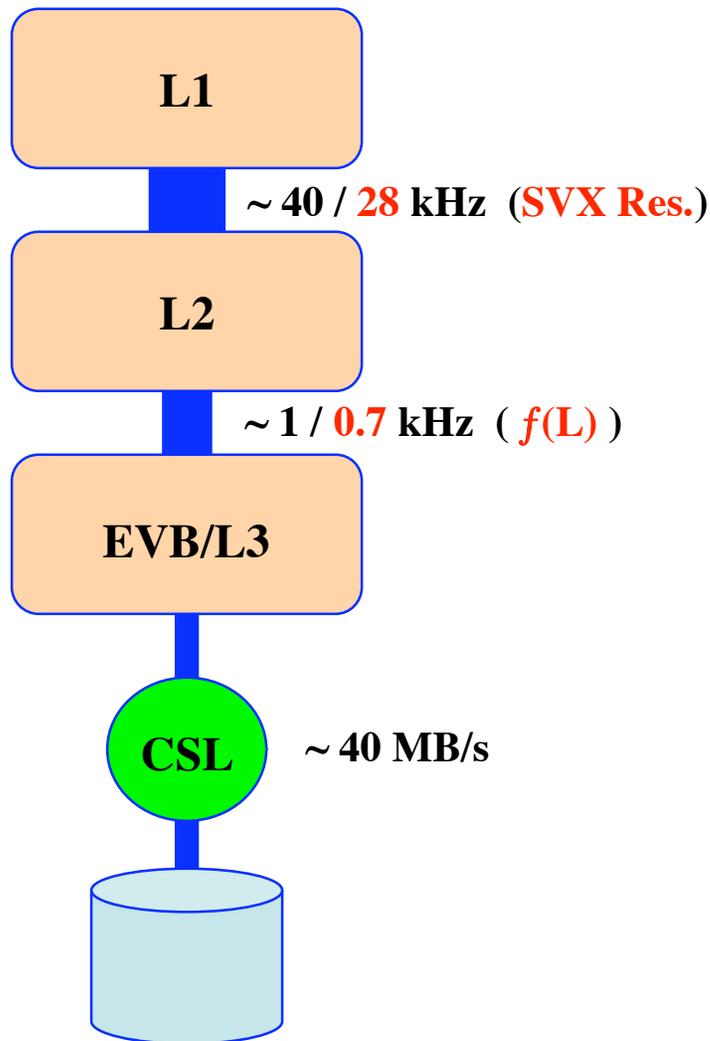
Introduction - TDWG

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- Current Trigger Status
- Need for L2 XFT Stereo Tracking & L2 Cal Upgrades
- Priorities For Deployment of Upgrades

Current Trigger Status

MAX / REALISED



Low luminosity ($\leq 110 E30$)

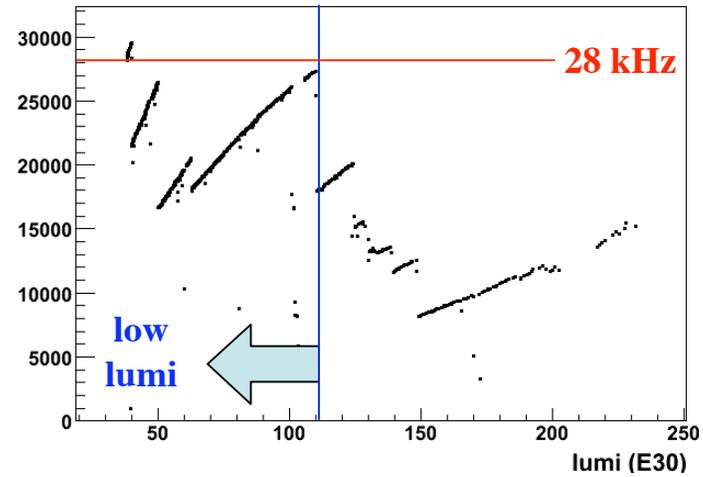
- ▶ L1 rate limited
- ▶ SLAM confirmation deployed across the 2-track triggers.
- ▶ Rate controlled with mixture of DPS, CLCM, lumi-enables and UPS.
- ▶ Further upgrades only on rate management : cascaded-UPS, reducing the rate jumps.

High luminosity ($> 110 E30$)

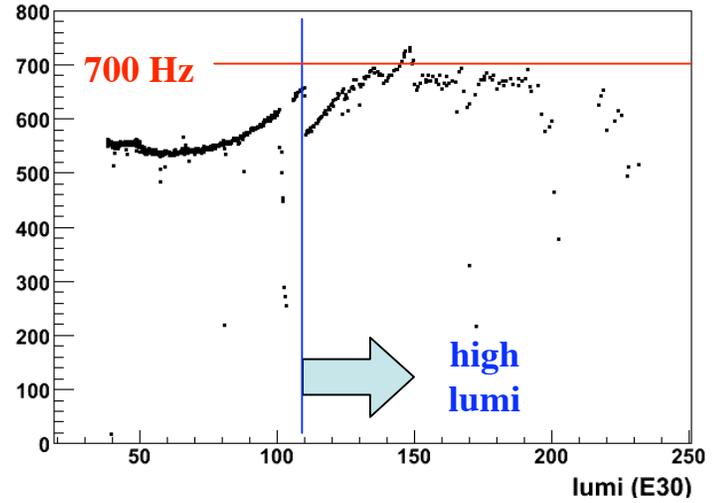
- ▶ L2 rate limited. Deadtime a complicated function of L1A, L2A, Luminosity.
- ▶ Rate controlled with mixture of DPS and lumi-enable.
- ▶ Still lots of scope for exploiting upgrades and being smarter.

Current Trigger Status

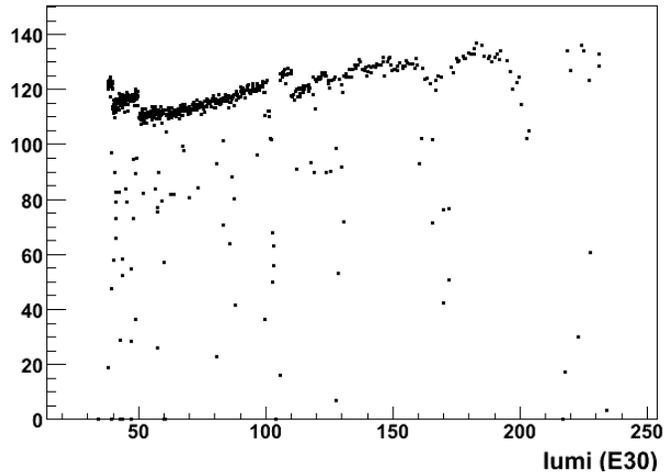
L1 rate (Hz)



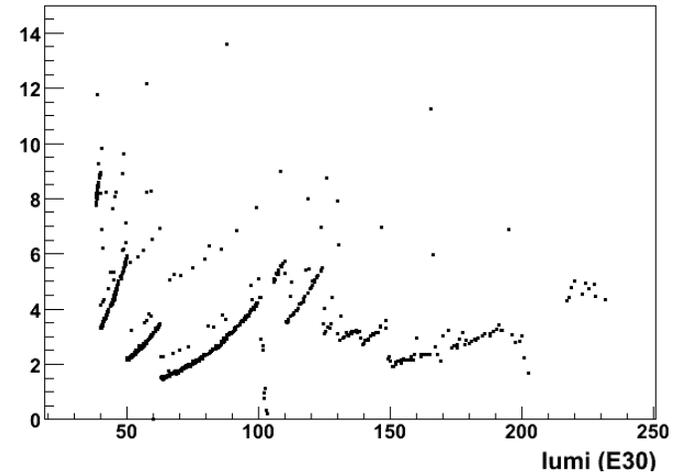
L2 rate (Hz)



L3 rate (Hz)

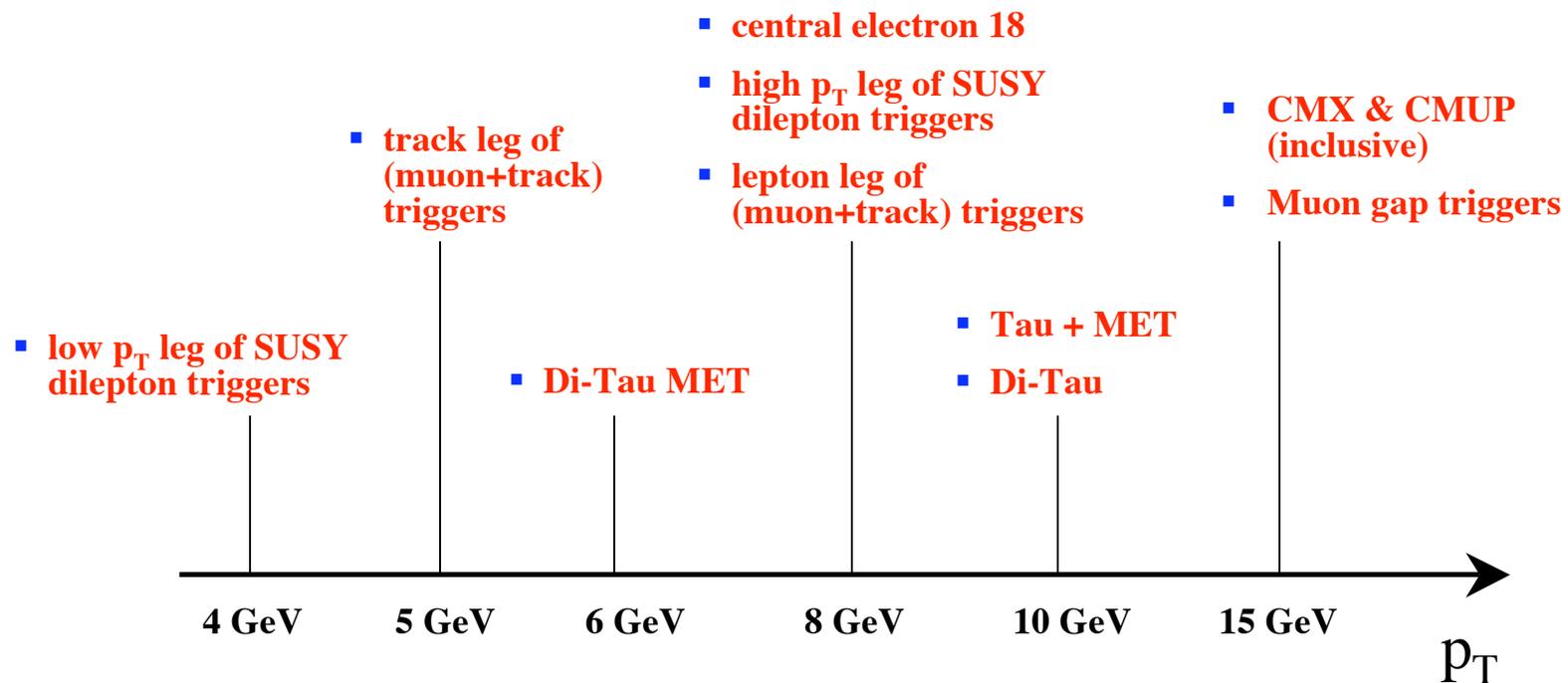


Deadtime (%)



L2 XFT Stereo Tracking

- ▶ Improvement in track purity with dedicated L2 stereo reconstruction.
- ▶ Additional handles through 3D matching with towers, muon chambers.
- ▶ Rate reduction @ L2 assumed in projections of Run IIb Trigger Committee and HTTF.
- ▶ Important high- p_T track thresholds :



L2 Cal Upgrade

- ▶ Operational motivation to deal with accelerating growth of MET, SUMET and some jet trigger cross sections.
- ▶ Much more flexible system; partly explored in HTTF.

- ▶ Critical triggers to benefit from upgrade :
 - ▶ **JET** (rate control at high luminosity)
 - ▶ **Inclusive MET** (sharper turn on)
 - ▶ **MET+JETS** (HTTF recommendation)
 - ▶ **Tau's** (work in progress)
 - ▶ Many other possibilities (track-jet matching etc.)

Plan for Deployment

- ▶ Basically : get sufficient data and operational experience before the shutdown that we can implement a fully upgraded trigger table over the shutdown.
- ▶ L2Cal test triggers already running : everything in place in terms of trigger table infrastructure (DB, L2 code) to define and build triggers that utilise the upgrade.
- ▶ L2 XFT stereo code exists but not yet integrated with the rest of the online code. Currently no test triggers running in main physics table.
- ▶ Our priorities will be something like :
 1. L2 XFT stereo on inclusive muon triggers. This is operationally where we most need to see the benefit of the upgrades right now.
 2. Implement HTTF recommendations for new and improved triggers, e.g. MET+JETS.
 3. Extend L2 XFT stereo and L2 Cal to all other triggers that benefit in terms of rate and/or efficiency.