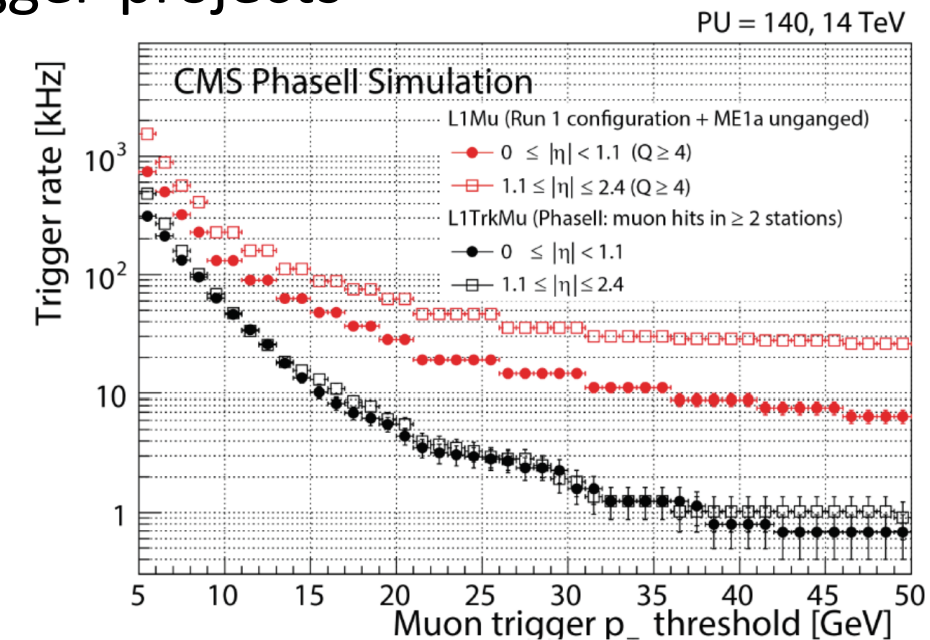


L1 Track Trigger status

Citation from Kristian Hahn & Peter Wittich talk given at the L1 trigger workshop in Madison (21/05/2016).

- <https://indico.cern.ch/event/622635/timetable/>
- https://indico.cern.ch/event/622635/contributions/2590663/attachments/1463890/262141/20170521_L1T_Madison_L1TKinterface.pdf
- “L1 Track trigger is a mature project
 - Tied to the TK schedule so more advanced than other trigger projects”
- Track Trigger (TT) needed to control trigger rates.
 - E.g. for L1 muons



L1 Track Trigger status

- After the December 2016 review 2 out of 3 proposals (TMT & Tracklet) merged together to work on a common pure FPGA approach
 - The third approach, based on Associative Memories, continues development until end of 2018 to provide backup.
- The hardware will not be fully defined anyway before 2019.

Work ahead

A lot.

- L1 Trigger menu is still at embryonal stage (maybe even before conception)
 - See for example Cristina Botta's talk:
https://indico.cern.ch/event/622635/contributions/2596464/attachments/1464619/2263693/L1TriggerMenu_200PU_220517.pdf
 - Trigger primitives not defined for several subdetectors
 - Trigger algorithms not tuned and often not even defined for $\mathcal{L} = 5 \cdot 10^{34} \text{cm}^{-2} \text{s}^{-1}$
- People are exploring different approaches for pattern ID and L1 tracking
 - Darin mentioned the idea of using BDTs for pattern ID (NOT written in his talk)
 - <https://indico.cern.ch/event/622635/contributions/2590676/attachments/1465178/2264761/MuTrigArch-Phase2-EMU.pdf>
 - Michail is studying the applicability of Kalman filter at L1
 - https://indico.cern.ch/event/622635/contributions/2599172/attachments/1465604/2265559/Bachtis_Muons_trigger.pdf

Bouncing ideas

- L1 muon primitives very advanced but still not settled.
 - Costas has proposed a possible architecture, but no algos.
 - https://indico.cern.ch/event/622635/contributions/2590680/attachments/1465317/2265189/Barrel-Muon-Trigger-Talk-Madison-May-24-2017_V0.pdf
- TT and μ -chamber correlator in the barrel has participation of Italy and Greece (and Spain), a natural place where to contribute:
 - Geographically
 - Because of past expertise
- μ -chamber only signatures are also interesting because of BSM physics with (very) displaced μ in the final state
 - => NO tracks from the tracker