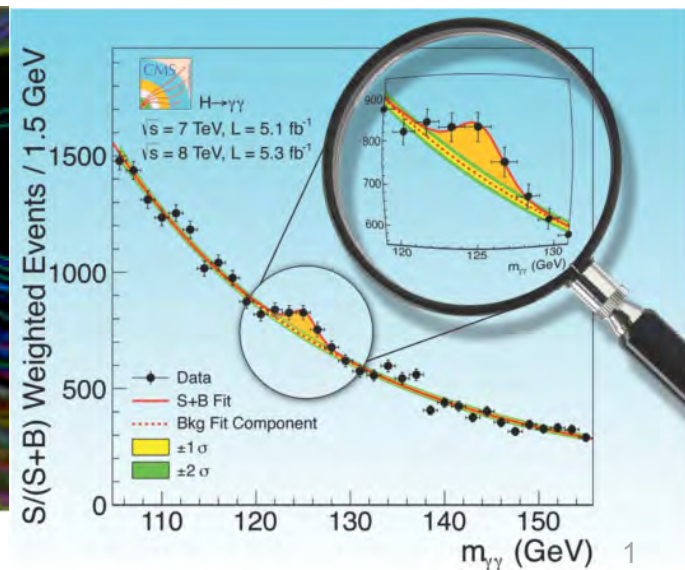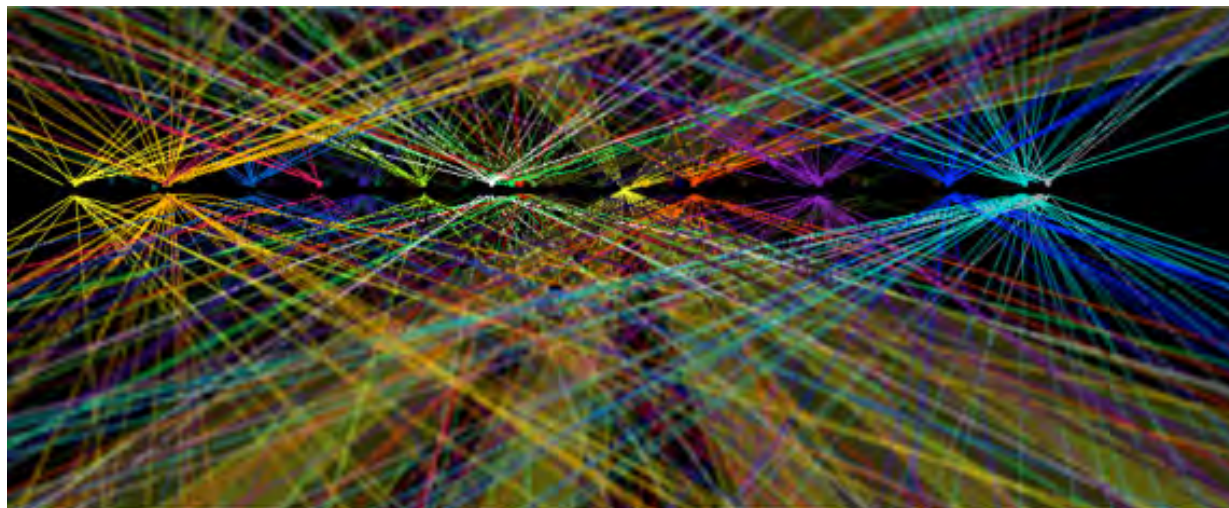# Level-1 EMU Trigger Upgrade Review: Introduction

Wesley Smith, U. Wisconsin

Level-1 EMU Trigger Upgrade Review

Texas A&M U., February 9, 2014

- **Status: Hardware, Software, Firmware: Milestones**
  - Muon Port Card Mezzanine - MPCM
  - Muon Track-Finder Cards – MTF7
  - Muon Sorter

- **Plans for 2014, 2015**
  - Upgrade
  - Operations and Commissioning

- **Remaining Preparations for CD2/3**
  - Last part of Review

L5 Active Mu. Trig. Milestones - Rice

- ## L5 - MPCM Software and Firmware Start 401.04.03.02.01 2013-11-01
  - Initial firmware version is ready, software for test stand is being built.

- ## L5 - MPCM Production Start 401.04.03.02.02 2013-11-01
  - Started, all the assembled boards in hand and testing is well along

- ## L5 -Start MPC-EMUTF Optical Fibers 401.04.03.03 2013-11-01
  - Short optical pigtails for MPC boards are at Rice. All 36 trunk cables for the EMUTF have been delivered to CERN. Installation at p.5 is planned for spring.

- ## L5 -Start Muon Sorter 401.04.03.06 2013-11-01
  - Preliminary work on hardware design started.

- ## L5 -Start Trigger Production 401.04.03.06 2013-11-01
  - Started, covered above

- ## L5-Start MSM Production 401.04.03.06.02 2013-11-01
  - Not started yet

Muon Port Card Mezzanine Plans

- Complete testing of the two pre-production mezzanines by the end of December

- Assemble 80 production boards in the 1st half of January

- Test 80 new mezzanines at Rice in January-March

- Set up a uTCA test stand at Rice in January-March

- Installation of 36 optical trunk cables at p.5: spring 2014

- Installation of the upgraded Muon Port Cards at p.5: late spring- early summer 2014

L5 Active Mu. Trig. Milest. - Florida

- L5-Start EMUTF Test, Install, and Commission 401.04.03.04.03 2013-11-04
  - A control PC of the type recommended by CERN was ordered for tests in Florida

- L5 -Start EMUTF Infrastructure   401.04.03.05   2013-11-01
  - A control PC of the type recommended by CERN was ordered for tests in Florida
  - First Optical Patch Panel Prototype delivered (next slide)

- L5 -Start EMUTF Infrastructure Production 401.04.03.05.01   2013-11-01
  - Started, covered above

- L5-Start EMUTF Software and Firmware   401.04.03.04.01   2013-11-04
  - A first version of the software emulator (for the initial endcap TF algorithm) has started. It is nearly ready to be used in CMSSW, but likely will occur in early 2014.
  - Software in the lab has been used to conduct the tests on and verify the functionality of the prototype boards.
  - Initial firmware for all MTF cards (FPGA control board, optics board, and PT LUT mezzanine board) has been written and already used for testing of the prototypes.

- L5-Start EMUTF Production   401.04.03.04.02   2013-11-04
  - Preproduction MTF7 board with Virtex-7 is under test at Florida

- Plans:
  - Test the MTF7 Virtex-7 prototype
  - Working preproduction prototypes will be brought to CERN for testing at B904 with other subsystems.
  - Revise MTF7 if required and launch production in 2014.