

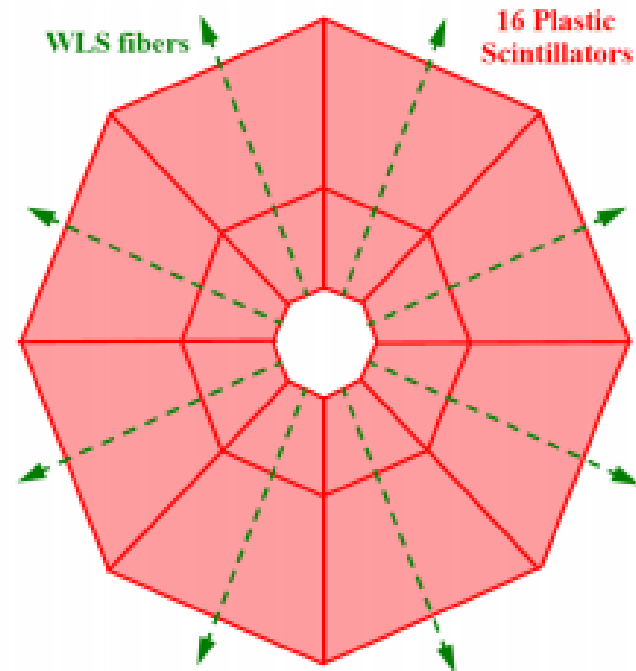
# Minimum Bias Trigger Scintillators

Rachel Hyneman

UM-CERN-REU 2014

# The MBTS – An Overview

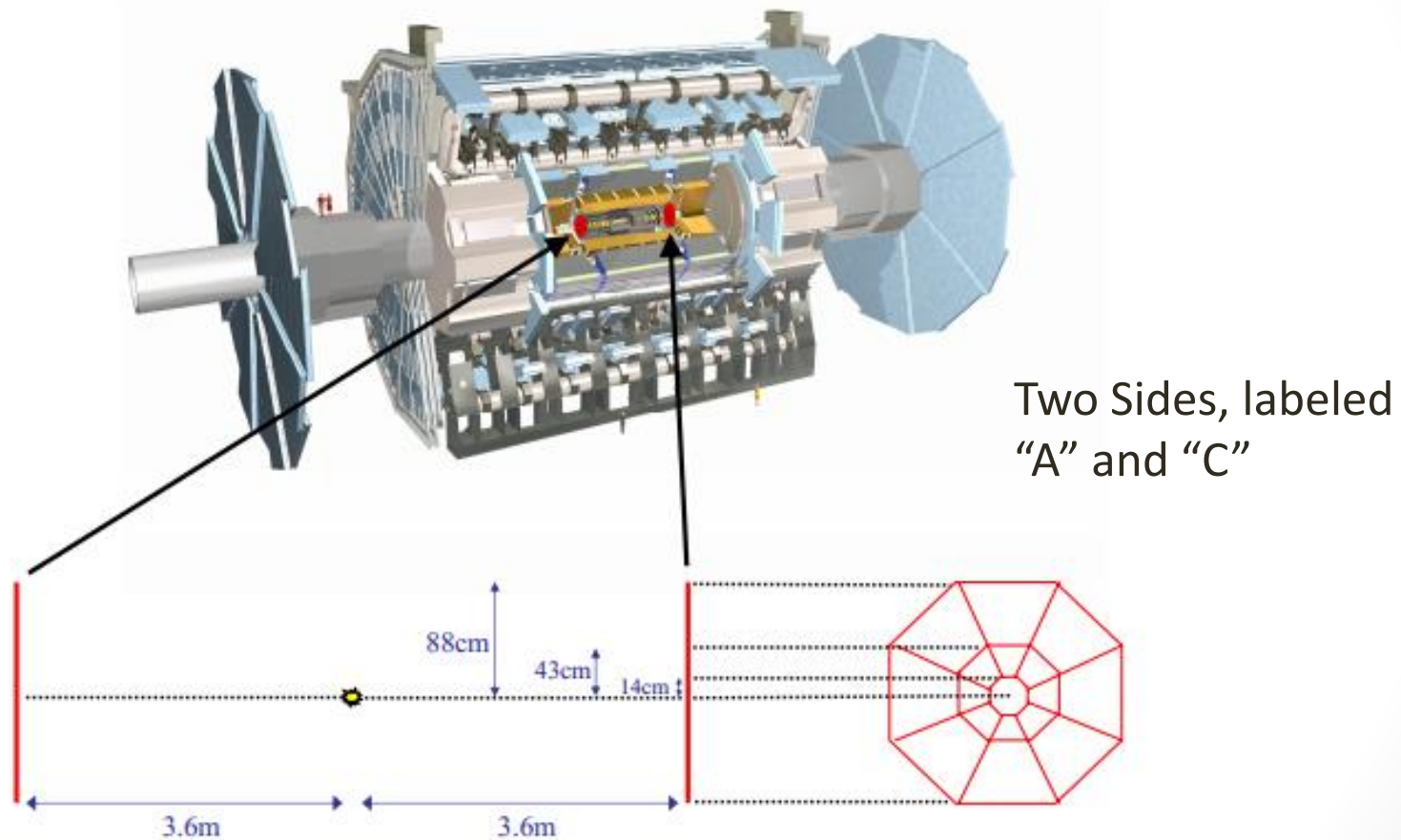
- One of the triggers available on ATLAS detector
- Comprised of a set of scintillating panels located near end-caps of the detector, perpendicular to the beam line
- Provided the lowest bias trigger for low-luminosity Run 1 events
  - Minimum bias = loose kinematic requirements to trigger



A diagram of one side of the MBTS used in Run 1

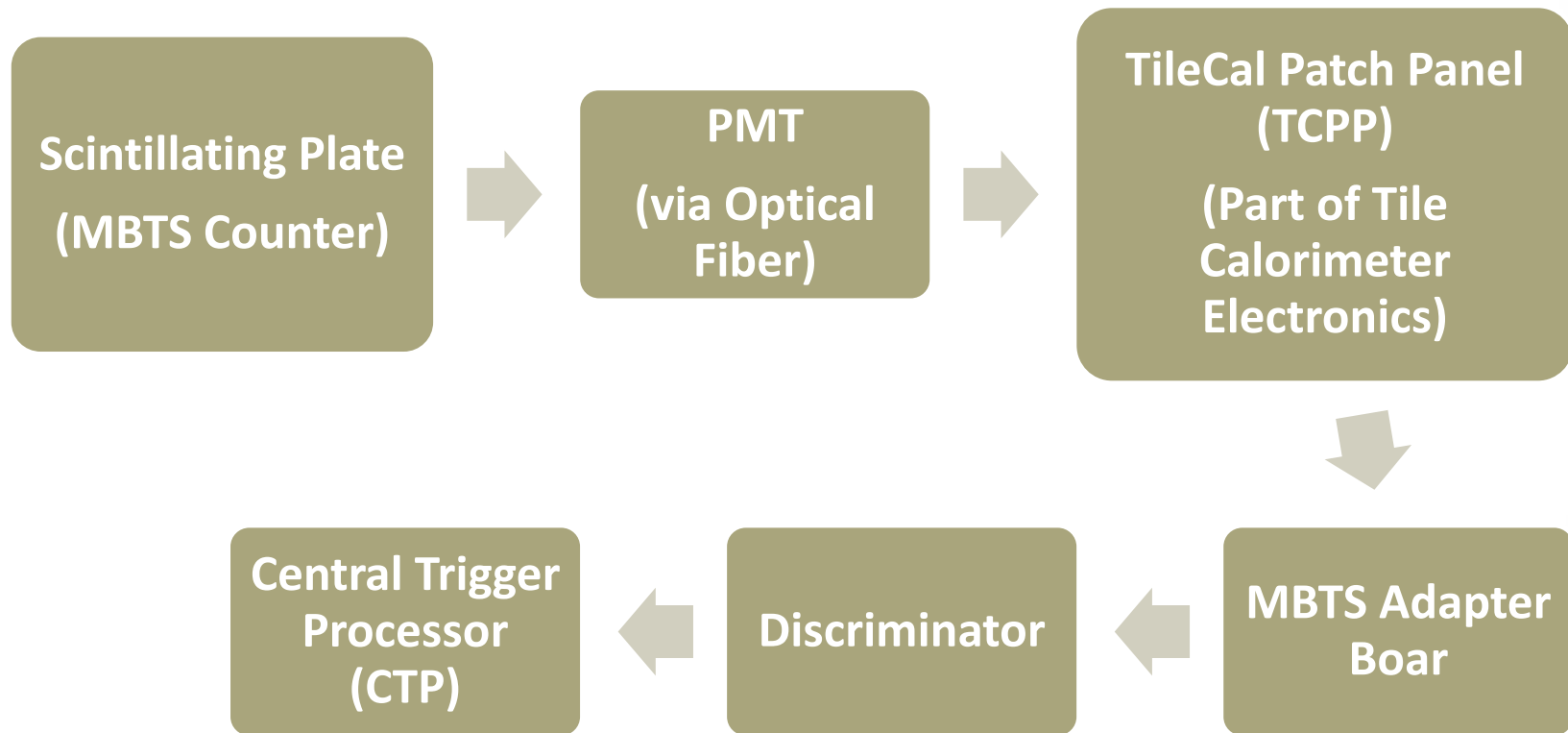
*Performance of the Minimum Bias  
Trigger in p-p Collisions at  $\sqrt{s} = 900$  GeV  
ATLAS-CONF-2010-025*

# The MBTS Within the ATLAS Detector



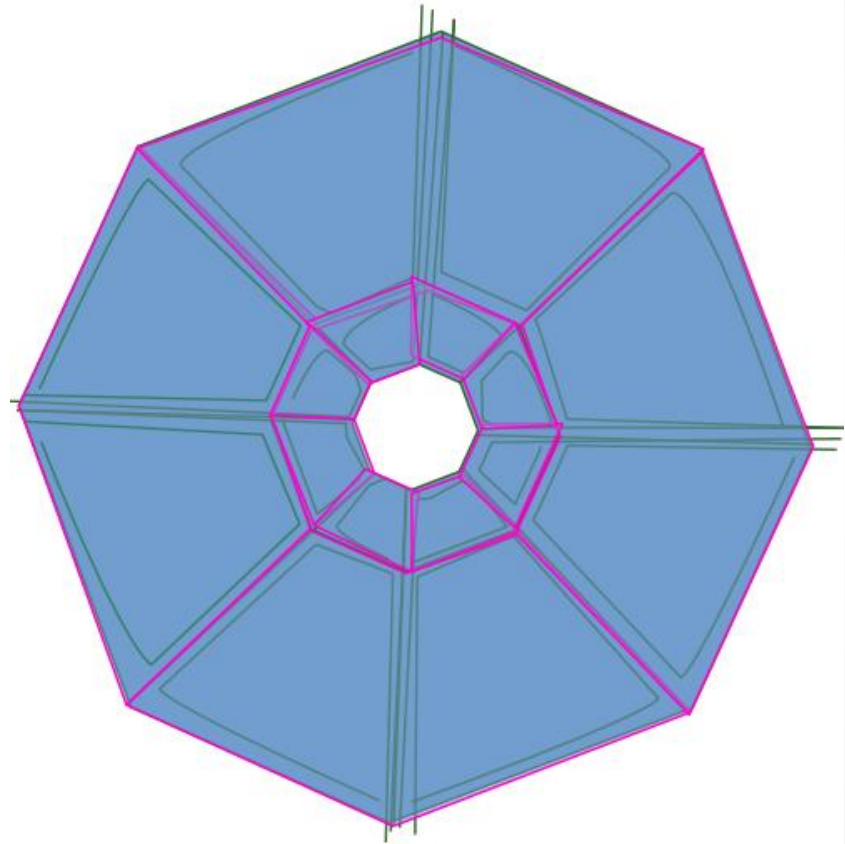
*In-situ Calibration of MBTS with 900 GeV and 7 TeV Data*  
Eric Feng, Sept 2013

# Overview of MBTS Electronics



# Changes to MBTS for Run 2

- Using fewer channels for read out
  - 12 on each side (previously 16)
- Outer ring: 8 panels  $\rightarrow$  4 panels
  - New scintillator layout shown in pink outline
- Discriminators: leading edge  $\rightarrow$  constant fraction



*ATLAS Minimum Bias Trigger  
Scintillator Upgrade for LHC RunII  
Antonio Sidoti*

# Status

- Already completed:
  - Combine outer scintillating plates
  - Reroute outputs through different TileCal drawers and PMT's
  - Use directly injected charge pulse to confirm correct installation
    - All of side C and outer ring of Side A correctly installed (with a few anomalies)
- To Be Completed:
  - Use laser to check PMT functionality
  - Calibrate outputs
  - Replace leading-edge discriminators with constant-fraction discriminators
  - Software trigger work (starting in July)

# Flaming Crepe in Paris!



# More Info

- ATLAS Conference Notes
  - ATLAS-CONF-2010-068, “Performance of the Minimum Bias Trigger in p-p Collisions at  $\sqrt{s} = 7$  TeV”
  - ATLAS-CONF-2010-025, “Performance of the Minimum Bias Trigger in p-p Collisions at  $\sqrt{s} = 900$  GeV”