CAL Pedestal Width Monitoring

Change the limits

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Recent pedestal widths

- **Distribution of LEX8 pedestal widths from November 2013**
  - **log10 of gaussian sigma**
    - Units = LEX8 bins
    - 1 bin = 33 keV
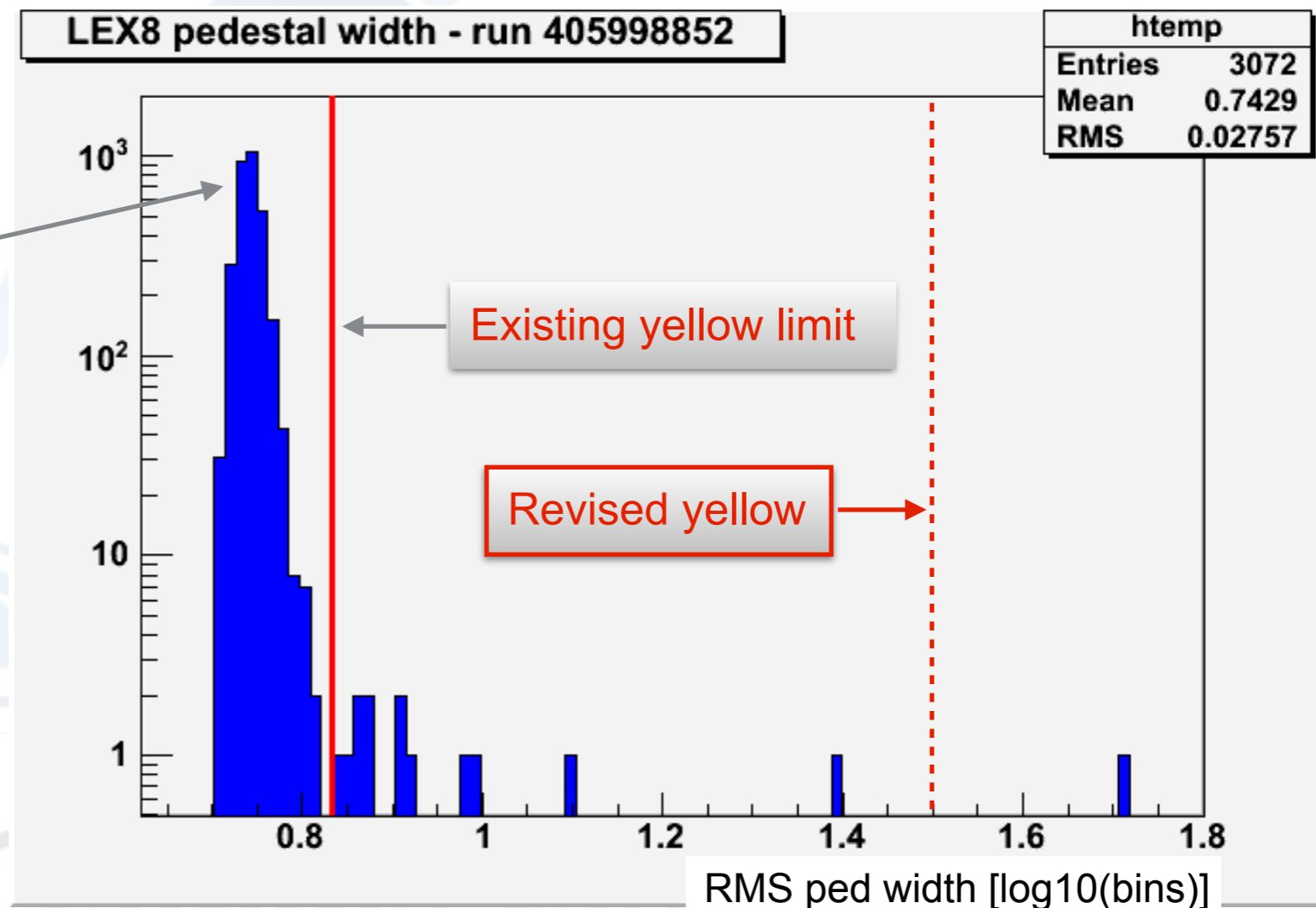 - **Typical LEX8 width**
    - 5.5 bins = 180 keV

- **Zero-suppression**
  - **LAC threshold = 2 MeV**
    - About 10 sigma
- **DQM pedestal RMS width alarm**
  - **LEX8 > 10 bins ~ 330 keV**
  - **LEX1 > 1.2 bins ~ 360 keV**

LEX8 pedestal width - run 405998852

htemp	
Entries	3072
Mean	0.7429
RMS	0.02757

Existing yellow limit

Revised yellow

RMS ped width [log10(bins)]

- **Yellow-high limits ~ 1/6 of zero-supp threshold = much lower than necessary**
  - **We know ped width trends are VERY slow**
  - **We are wasting the time of DQM screeners, L1 team at SLAC, and CAL experts by responding to existing yellow-high limit violations**

Revised limits on pedestal widths

- **Existing limits**

  LEX8: [4.0 | 4.5 | --- | 10.0 | 15.0]
  LEX1: [0.5 | 0.6 | --- | 1.2 | 1.8]
  HEX8: [2.0 | 3.0 | --- | 4.0 | 5.0]
  HEX1: [0.3 | 0.45 | --- | 0.6 | 0.8]

- **Raise the limits on pedestal RMS**

  - **Yellow high, LEX8 and LEX1**

    - 2 sigma = 2 MeV (= LAC)
    - Yellow high: ped RMS = 1 MeV

  - **Red high, LEX8 and LEX1**
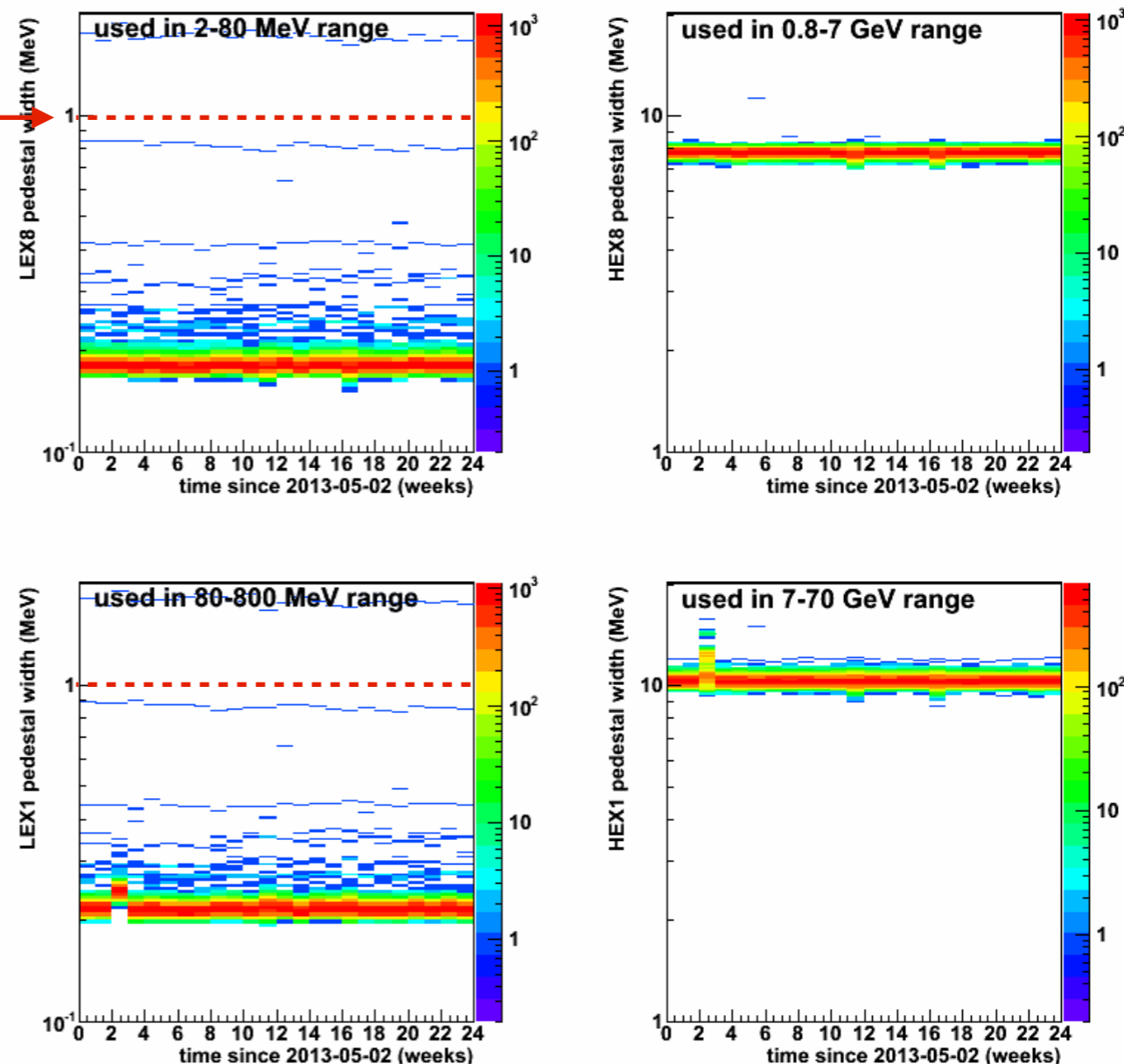
    - 1 sigma = 2 MeV (= LAC)

  - **Don't change HEX8 [HEX1]**

    - Yellow high ~ 20 MeV [30 MeV]
    - Red high ~ 30 MeV [40 MeV]

- **Revised limits on pedestal RMS**

  - **See table at right**
  - **Revised values are in red**

Revised yellow

LEX8: [4.0 | 4.5 | --- | 30.0 | 60.0]
LEX1: [0.5 | 0.6 | --- | 3.3 | 6.6]
HEX8: [2.0 | 3.0 | --- | 4.0 | 5.0]
HEX1: [0.3 | 0.45 | --- | 0.6 | 0.8]