EMCal trigger: L0 vs. L1

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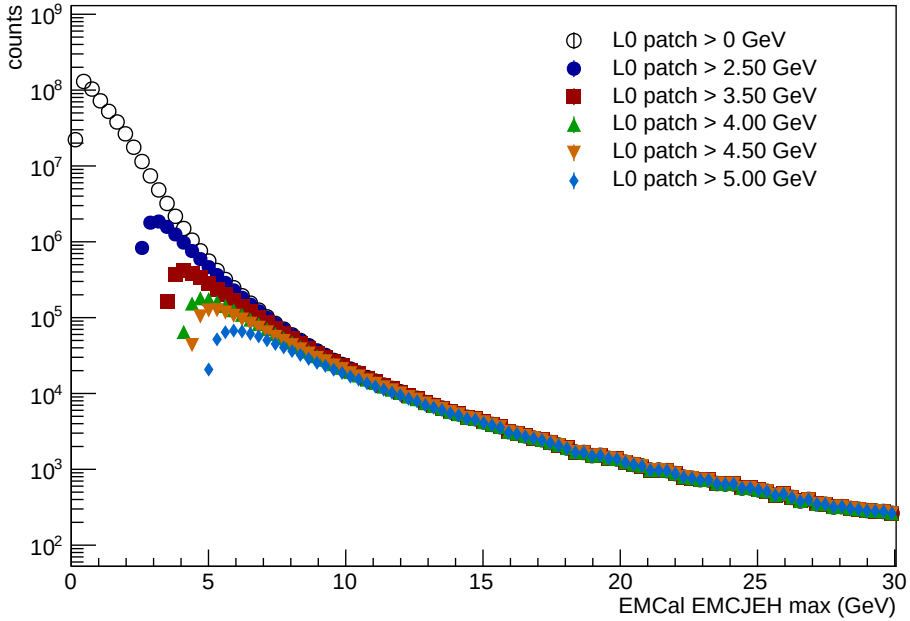
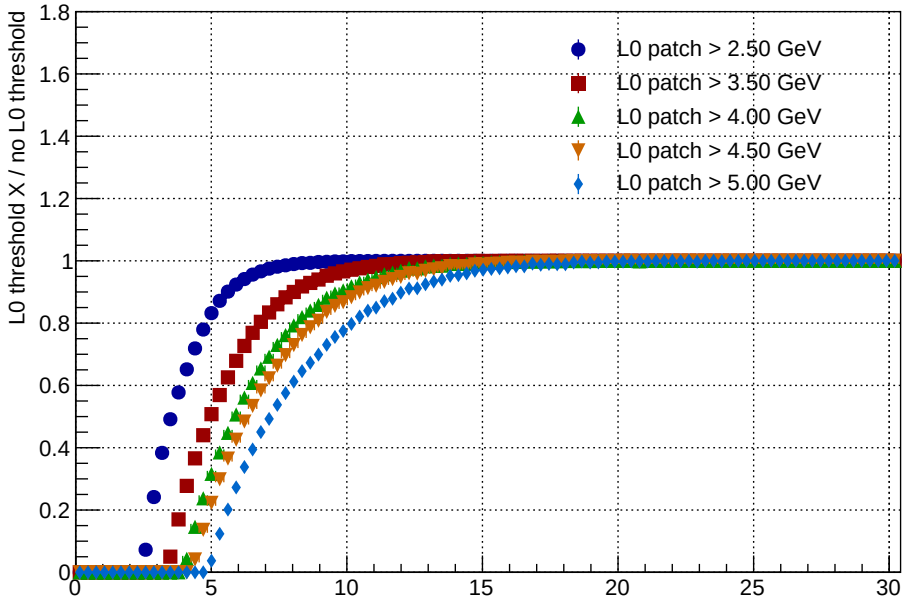
Introduction

- Request from trigger coordination to increase L0 threshold to reduce ALICE dead time
- Study impact of the L0 threshold on jet trigger
- Use LHC16q data (p–Pb @ 5 TeV)

L0 vs. JE 16x16 (FEE data)





- EMCal only
- J1 threshold is 23 GeV, J2 threshold is 18 GeV
- Tabulated values in the next slide

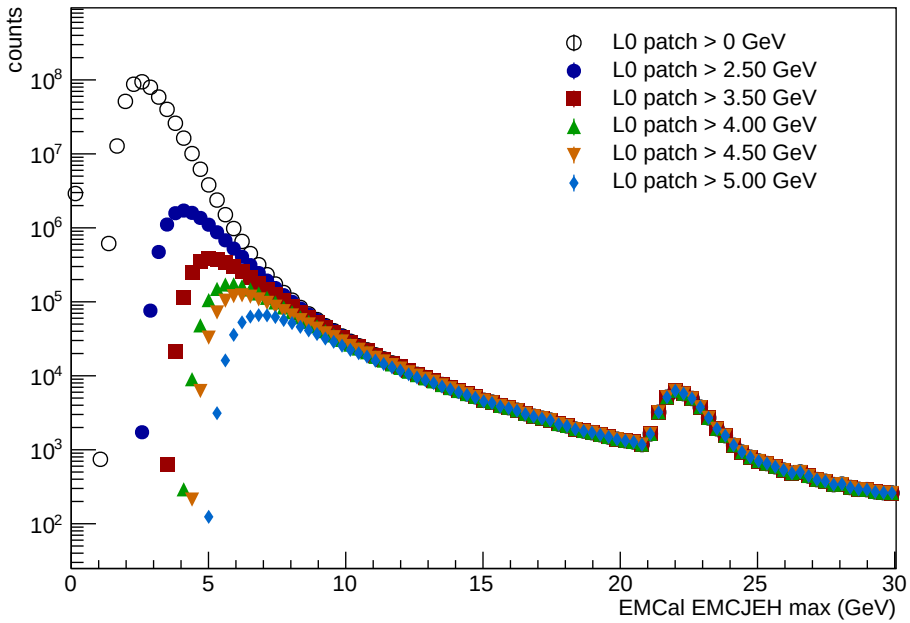
L0 vs. JE 16x16 (FEE data): table

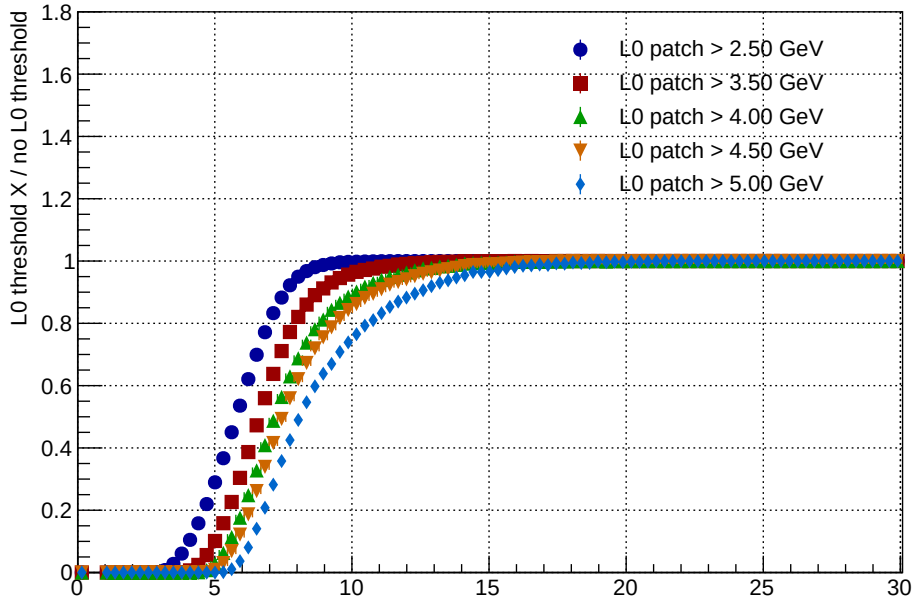
- L0 patch > 2.5, 3.5 GeV
  - JE patch = 16.85 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0004$
  - JE patch = 18.36 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0007$
  - JE patch = 19.88 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0008$
  - JE patch = 21.40 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0012$
  - JE patch = 22.92 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$
  - JE patch = 24.43 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0020$
  - JE patch = 25.95 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0024$
- L0 patch > 4.0 GeV
  - JE patch = 16.85 GeV $\rightarrow$ ratio = $0.998 + 0.0007 - 0.0009$
  - JE patch = 18.36 GeV $\rightarrow$ ratio = $0.999 + 0.0004 - 0.0009$
  - JE patch = 19.88 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0008$
  - JE patch = 21.40 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0012$
  - JE patch = 22.92 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$
  - JE patch = 24.43 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0020$
  - JE patch = 25.95 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0024$

L0 vs. JE 16x16 (FEE data): table (cont'd)

- L0 patch > 4.5 GeV
  - JE patch = 16.85 GeV $\rightarrow$ ratio = $0.997 + 0.0010 - 0.0012$
  - JE patch = 18.36 GeV $\rightarrow$ ratio = $0.999 + 0.0007 - 0.0011$
  - JE patch = 19.88 GeV $\rightarrow$ ratio = $0.999 + 0.0005 - 0.0011$
  - JE patch = 21.40 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0012$
  - JE patch = 22.92 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$
  - JE patch = 24.43 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0020$
  - JE patch = 25.95 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0024$
- L0 patch > 5.0 GeV
  - JE patch = 16.85 GeV $\rightarrow$ ratio = $0.991 + 0.0017 - 0.0020$
  - JE patch = 18.36 GeV $\rightarrow$ ratio = $0.995 + 0.0016 - 0.0020$
  - JE patch = 19.88 GeV $\rightarrow$ ratio = $0.998 + 0.0011 - 0.0016$
  - JE patch = 21.40 GeV $\rightarrow$ ratio = $0.999 + 0.0007 - 0.0015$
  - JE patch = 22.92 GeV $\rightarrow$ ratio = $0.997 + 0.0016 - 0.0025$
  - JE patch = 24.43 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0020$
  - JE patch = 25.95 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0024$

GA vs. JE 16x16 (STU data)





- EMCal only
- J1 threshold is 25 GeV, J2 threshold is 18 GeV

GA vs. JE 16x16 (STU data): table

- L0 patch > 2.5, 3.5, 4.0 GeV
  - JE patch = 17.45 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0005$
  - JE patch = 18.97 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0007$
  - JE patch = 20.49 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0009$
  - JE patch = 22.01 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0002$
  - JE patch = 23.52 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0006$
  - JE patch = 25.04 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$
- L0 patch > 4.5 GeV
  - JE patch = 17.45 GeV $\rightarrow$ ratio = $0.998 + 0.0007 - 0.0010$
  - JE patch = 18.97 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0007$
  - JE patch = 20.49 GeV $\rightarrow$ ratio = $0.999 + 0.0006 - 0.0012$
  - JE patch = 22.01 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0002$
  - JE patch = 23.52 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0006$
  - JE patch = 25.04 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$

GA vs. JE 16x16 (STU data): table (cont'd)

- L0 patch > 5.0 GeV
  - JE patch = 17.45 GeV $\rightarrow$ ratio = $0.992 + 0.0016 - 0.0019$
  - JE patch = 18.97 GeV $\rightarrow$ ratio = $0.999 + 0.0007 - 0.0011$
  - JE patch = 20.49 GeV $\rightarrow$ ratio = $0.998 + 0.0011 - 0.0017$
  - JE patch = 22.01 GeV $\rightarrow$ ratio = $1.000 + 0.0001 - 0.0002$
  - JE patch = 23.52 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0006$
  - JE patch = 25.04 GeV $\rightarrow$ ratio = $1.000 + 0.0000 - 0.0016$