



LEHIGH
UNIVERSITY

J/ ψ dependence on multiplicity at 500 GeV

Multiplicity Intervals?

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Dataset: pp-2017 510GeV (^{10%} produced)

For example:

`st_physics_18053128_raw_1000002.picoDst.root`

Event selection:

Trigger: BHT1*VPD30 (570214)

Event cuts:

vzTPC -50 -> 50 cm -21%

|vzVPD – vzTPC| < 10.0 cm -46%

~~< 6.0 cm~~

Tracking cuts:

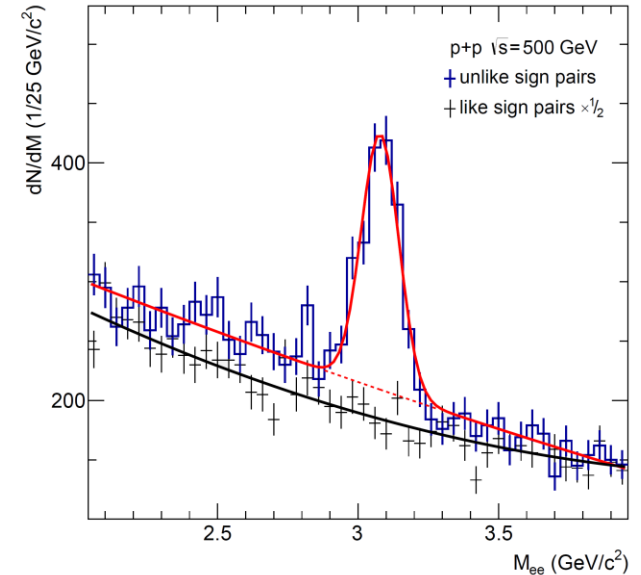
| | |
|------------|-----------------|
| eta | -1.0 -> 1.0 |
| p_T | 0.2 -> 50 GeV/c |
| DCA | 0 -> 1 cm |
| nHitsFit | 20+ |
| nHitsRatio | 0.52 |
| nHitsdEdx | 11+ |

PID cuts:

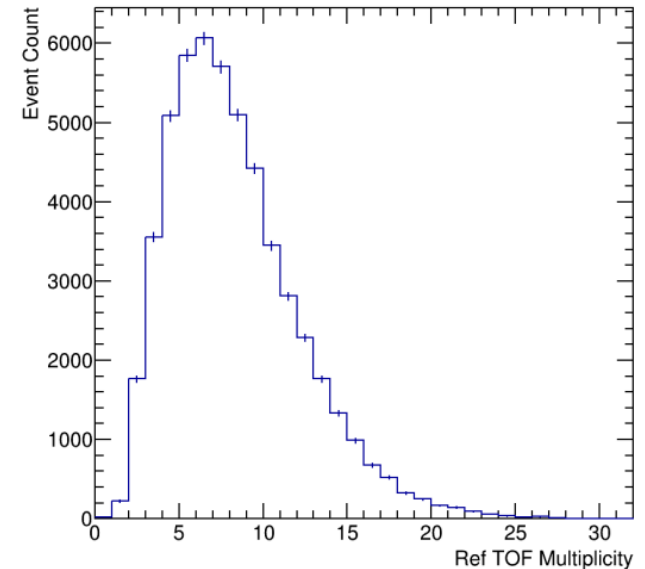
| | |
|----------------|--------------|
| nSigmaElectron | -1.9 -> 3.0 |
| E/p | 0.67 -> 3.33 |
| beta | 0.97 -> 1.03 |

| mTOFlocalY | < 10

J/ ψ Invariant Mass



Multiplicity



J/ψ production cross section and its dependence on charged-particle multiplicity in $p+p$ collisions at $\sqrt{s} = 200$ GeV

STAR Collaboration

Physics Letters B 786 (2018) 87-93

arxiv.org/pdf/1805.03745.pdf

Quoted Intervals:

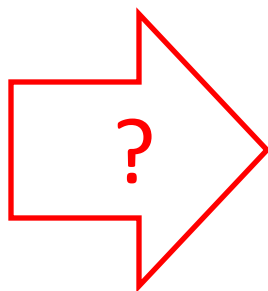
0 - 5

6 - 10

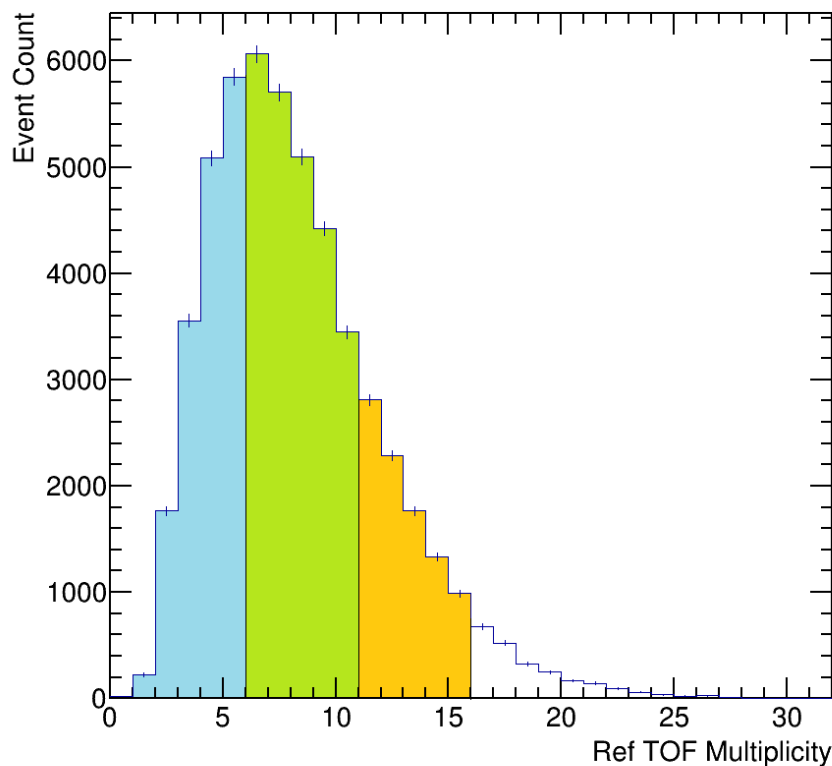
11 - 15

16 - 21

22 - 31

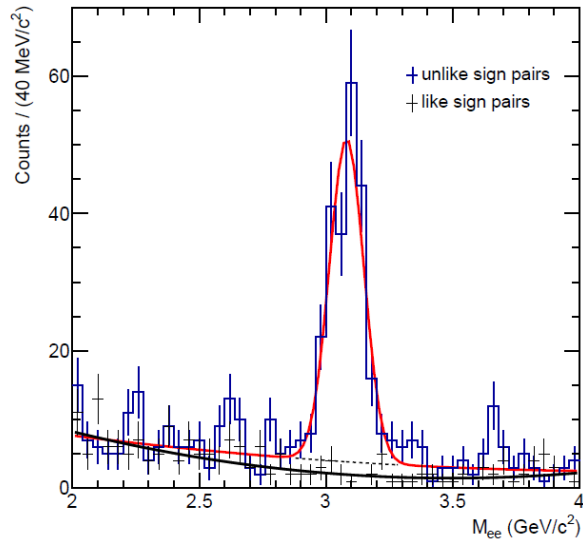


pp500_2017 TOF Multiplicity

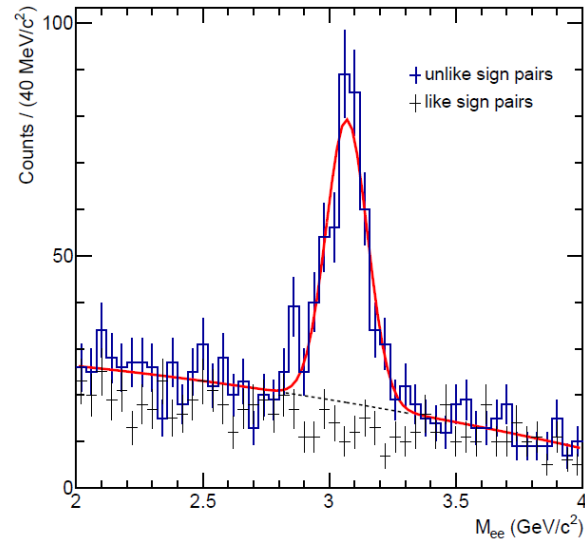


Re-use multiplicity intervals from $p+p$ 200 GeV?

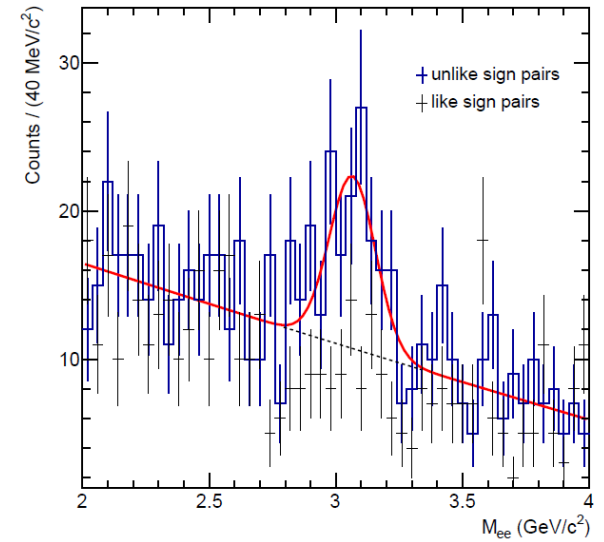
TOF Mult 0-5



6-10

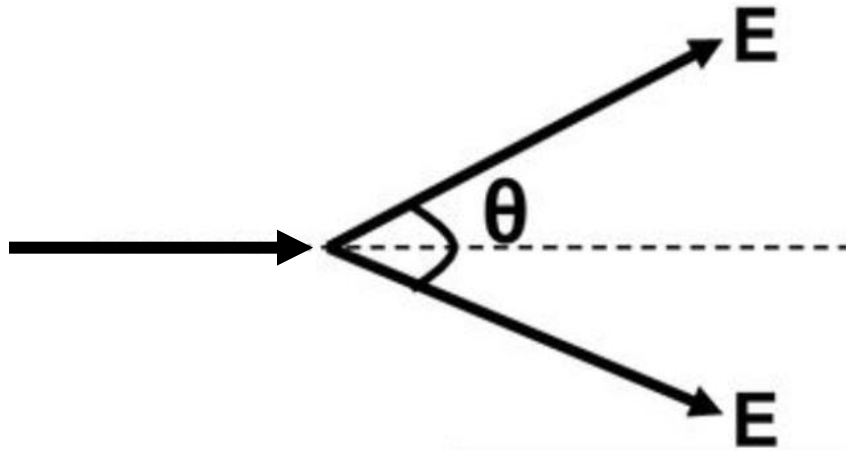


11-15



backup

Invariant Mass Method



$$M_{eff} = \sqrt{2EE(1 - \cos \theta)}$$

$$M^2 \simeq 2p_{T1}p_{T2}(\cosh(\eta_1 - \eta_2) - \cos(\phi_1 - \phi_2)).$$

$$M^2 = (E_1 + E_2)^2 - \|\mathbf{p}_1 + \mathbf{p}_2\|^2$$

J/ψ production cross section and its dependence on charged-particle multiplicity in $p+p$ collisions at $\sqrt{s} = 200$ GeV

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J/ψ Production as a Function of Charged Particle Multiplicity in pp Collisions at $\sqrt{s} = 7$ TeV

The ALICE Collaboration *

Physics Letters B 712 (2012) 165-175

arxiv.org/pdf/1202.2816.pdf

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