Strange particle in jets and underlying events with different models

1 Simulate with PYTHIA 8 sQCD with CR1 and rope

Parameters

Beams:idA = 2212
Beams:idB = 2212
Main:numberOfEvents = 1001
Beams:eCM = 7000.
SoftQCD:all = on

CR
MultiPartonInteractions:pT0Ref = 2.15
BeamRemnants:remnantMode = 1
BeamRemnants:saturation = 5
ColourReconnection:reconnect = on
ColourReconnection:mode = 1
ColourReconnection:allowDoubleJunRem = off
ColourReconnection:m0 = 0.3
ColourReconnection:allowJunctions = on
ColourReconnection:junctionCorrection = 1.2
ColourReconnection:timeDilationMode = 2
ColourReconnection:timeDilationPar = 0.18

Rope
Ropewalk:RopeHadronization = on
Ropewalk:doShoving = on
Ropewalk:tInit = 1.5
Ropewalk:deltat = 0.05
Ropewalk:tShove = 0.1
Ropewalk:gAmplitude = 0.

Ropewalk:doFlavour = on
Ropewalk:r0 = 0.5
Ropewalk:m0 = 0.2
Ropewalk:beta = 0.1

!// Enabling setting of vertex information.
PartonVertex:setVertex = on
PartonVertex:protonRadius = 0.7
PartonVertex:emissionWidth = 0.1

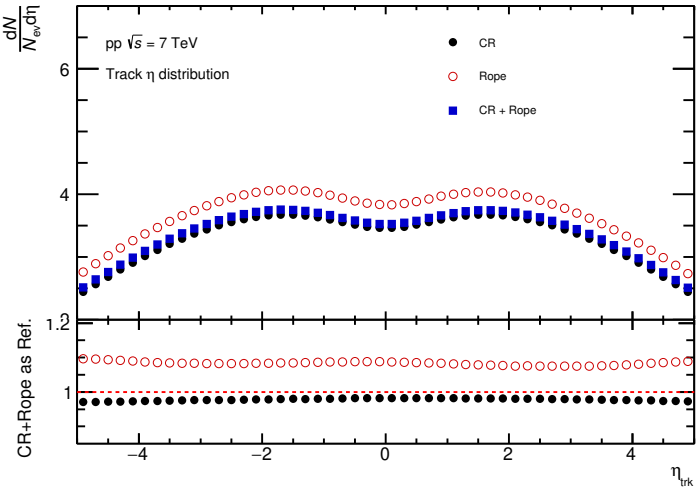

Figure 1: Track η distribution.

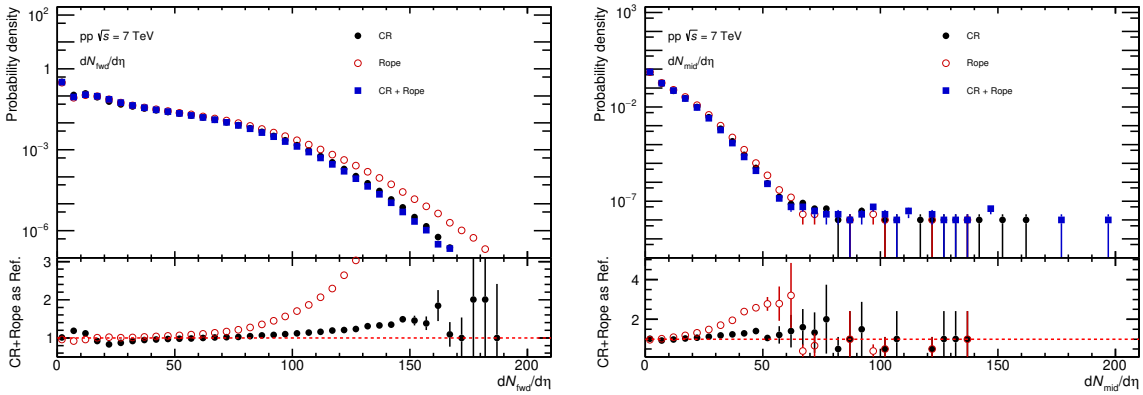

Figure 2: $\mathrm{d}N_{\mathrm{fwd}}/\mathrm{d}\eta$(left) and $\mathrm{d}N_{\mathrm{mid}}/\mathrm{d}\eta$(right) distribution.

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References

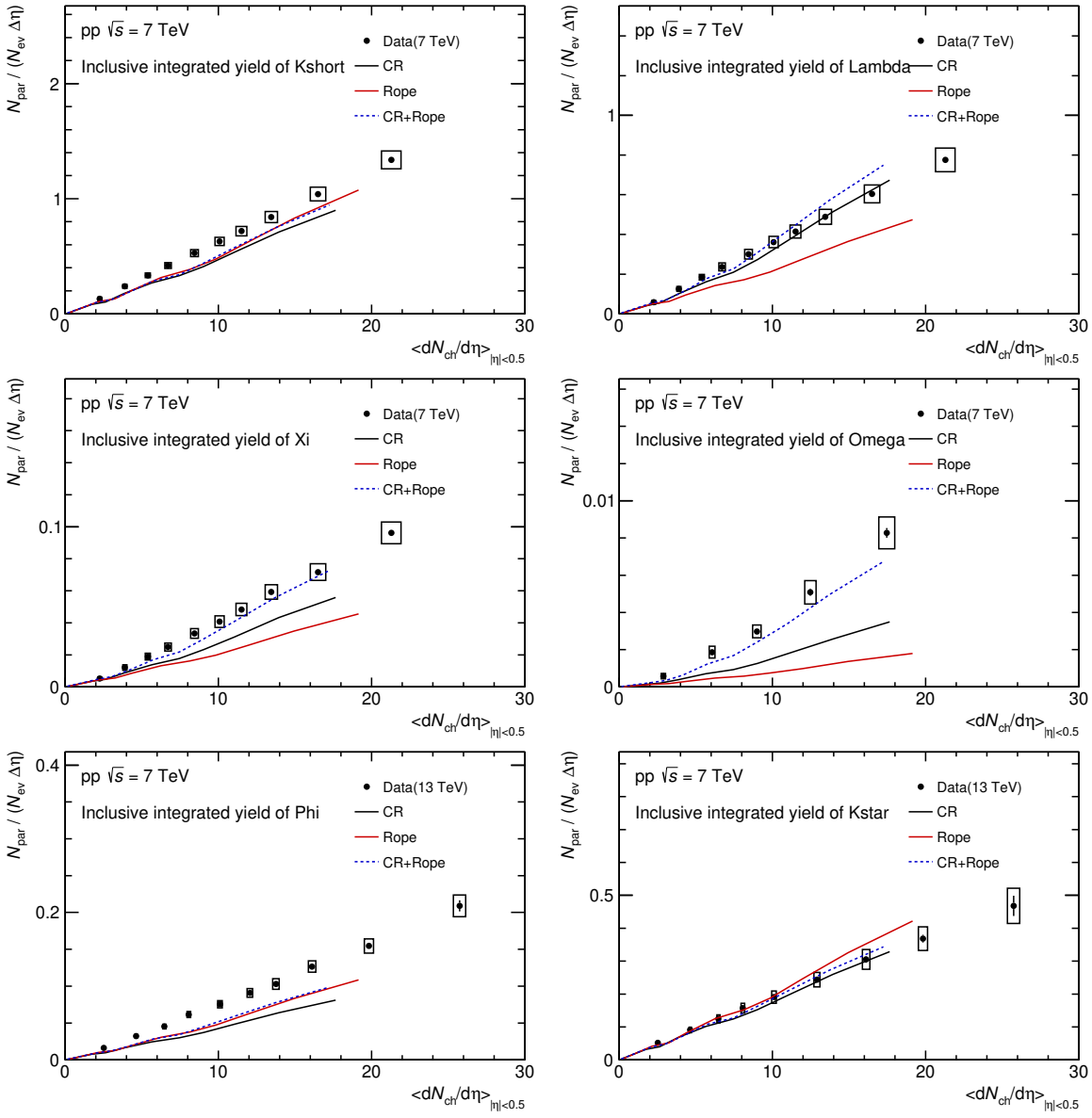

Figure 3: Inclusive integrated yields of particles with $\langle \mathrm{d}N_{\mathrm{ch}}/\mathrm{d}\eta \rangle$.(Data taken from arXiv:1606.07424v2 and arXiv:1910.14397v1)

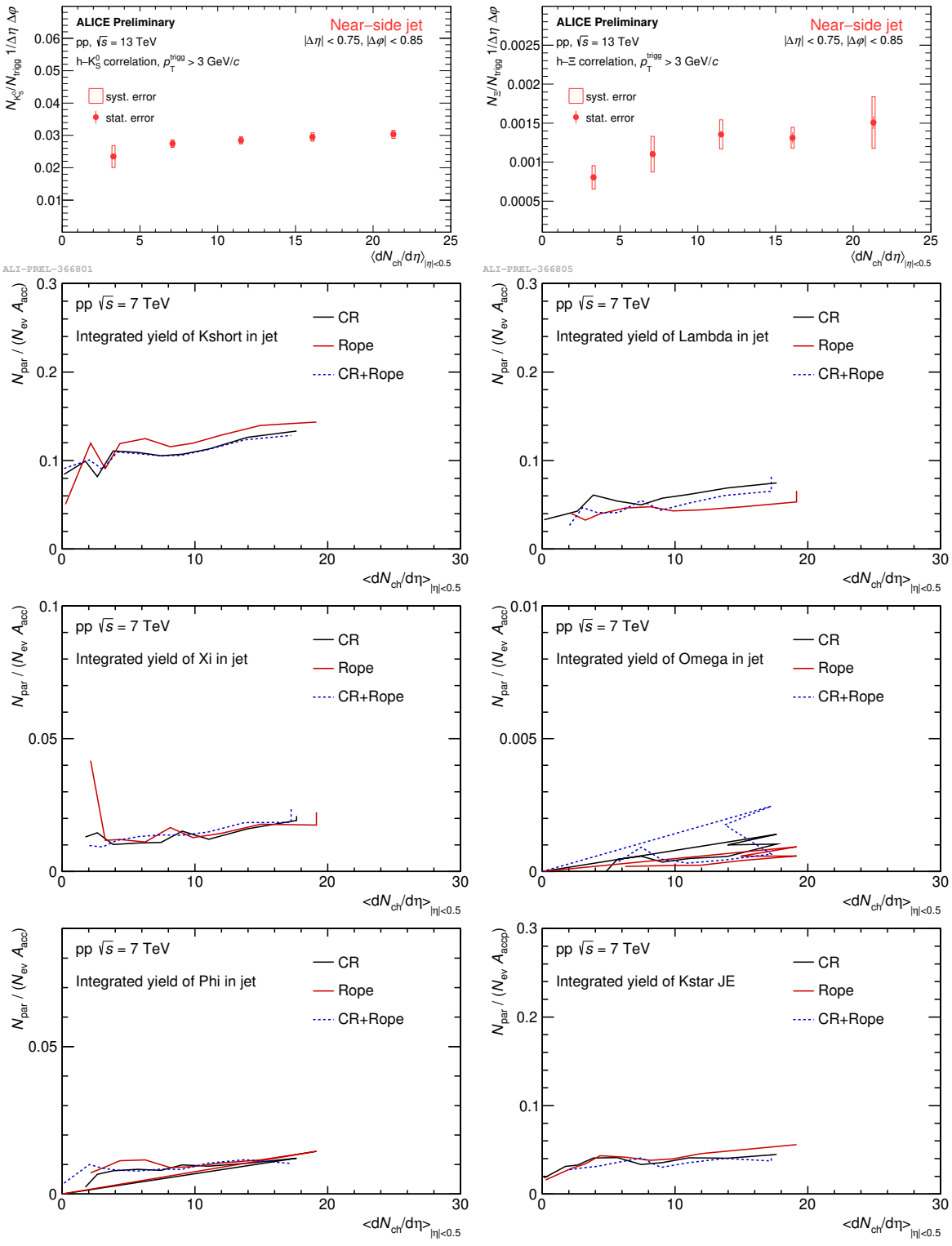

Figure 4: Integrated yields of particles in jet with $\langle \mathrm{d}N_{\mathrm{ch}}/\mathrm{d}\eta \rangle$.(Data point at 13 TeV is used hadron-strange correlation method)

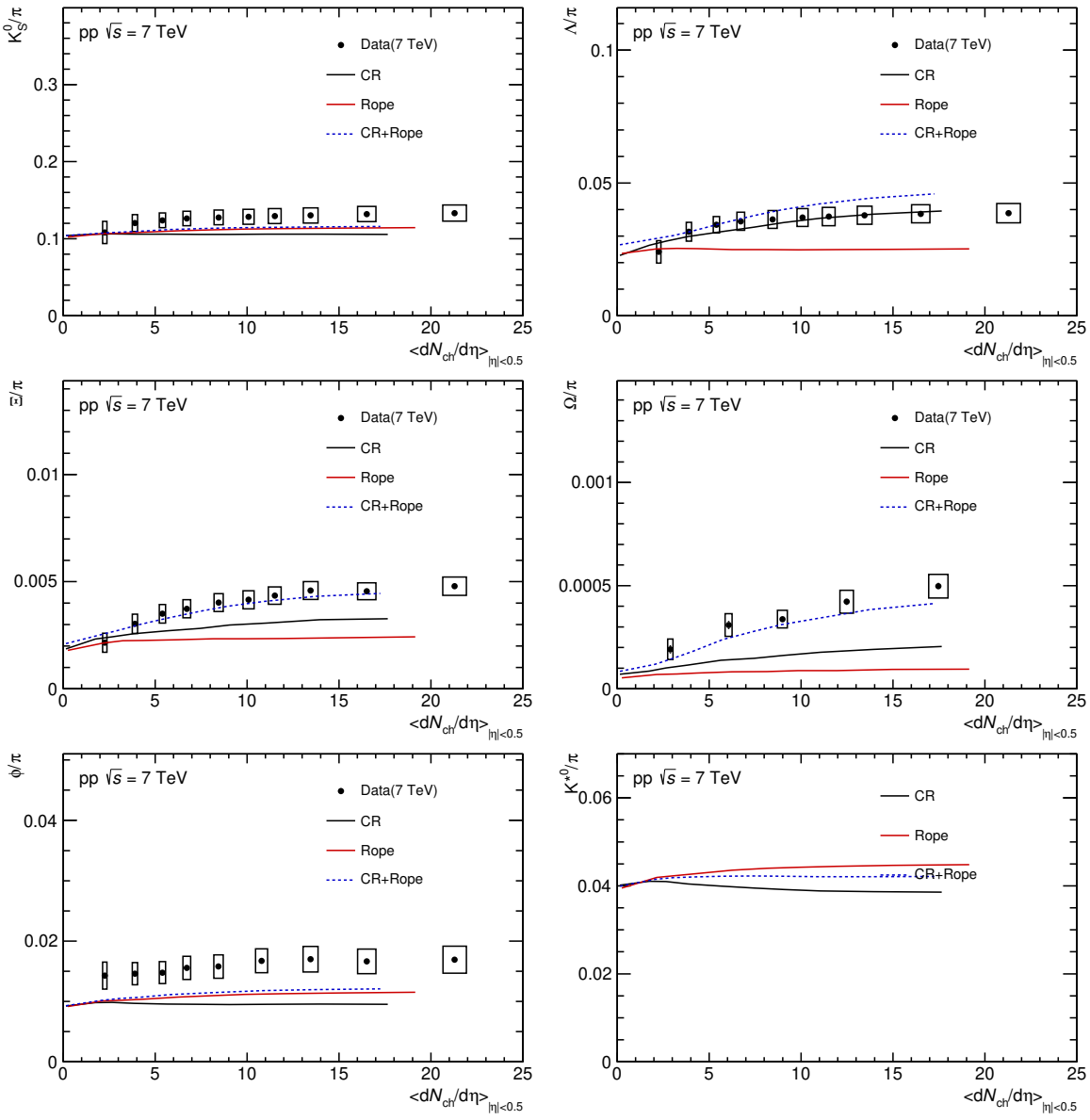

Figure 5: Inclusive integrated yields ratios of strange particle to π with $\langle dN_{ch}/d\eta \rangle$. (Data taken from arXiv:1606.07424v2 and arXiv:1807.11321v2)

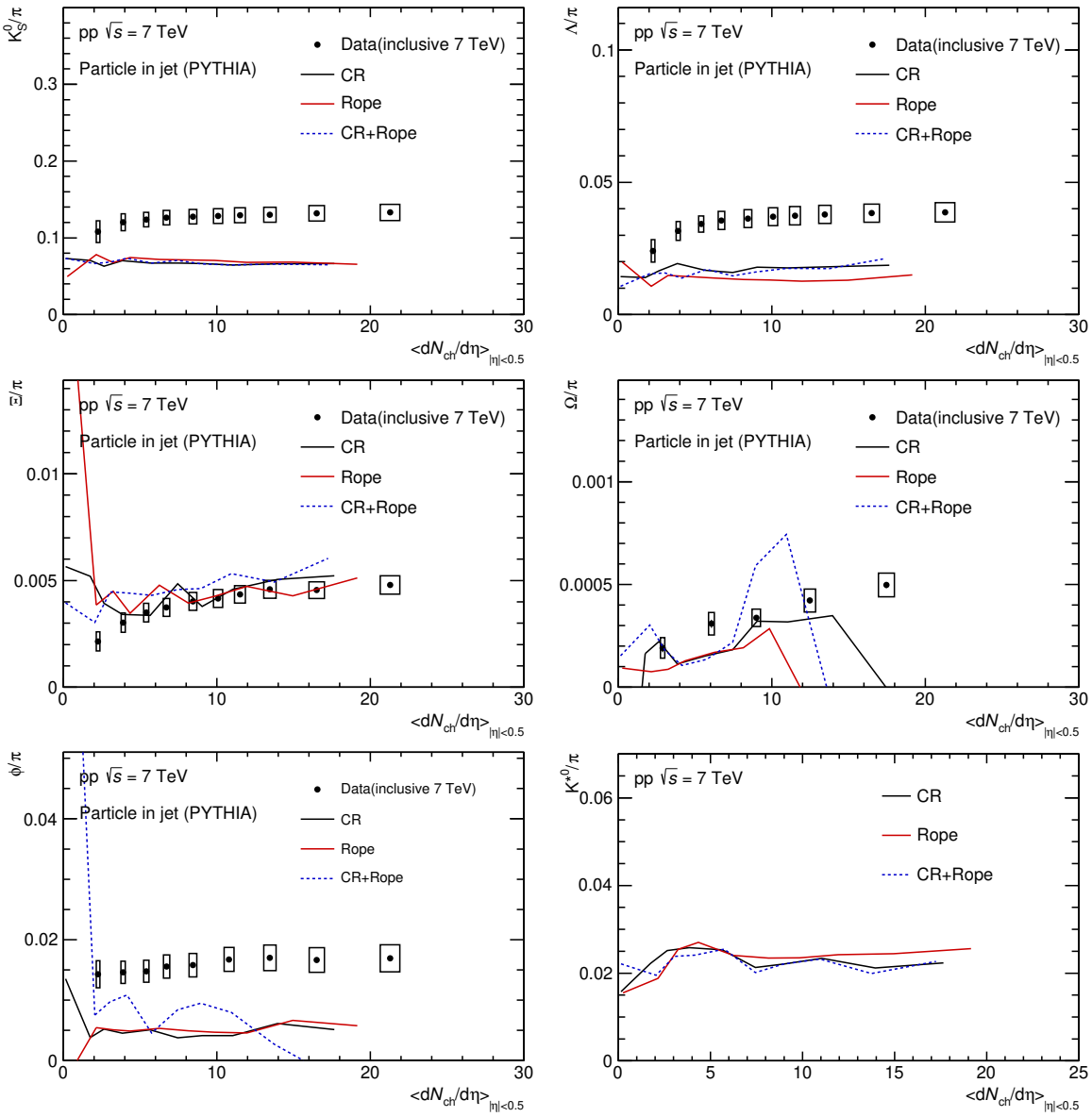

Figure 6: Integrated yields ratios in jet of strange particle to π with $\langle \mathrm{d}N_{\mathrm{ch}}/\mathrm{d}\eta \rangle$. (Data taken from arXiv:1606.07424v2 and arXiv:1807.11321v2)

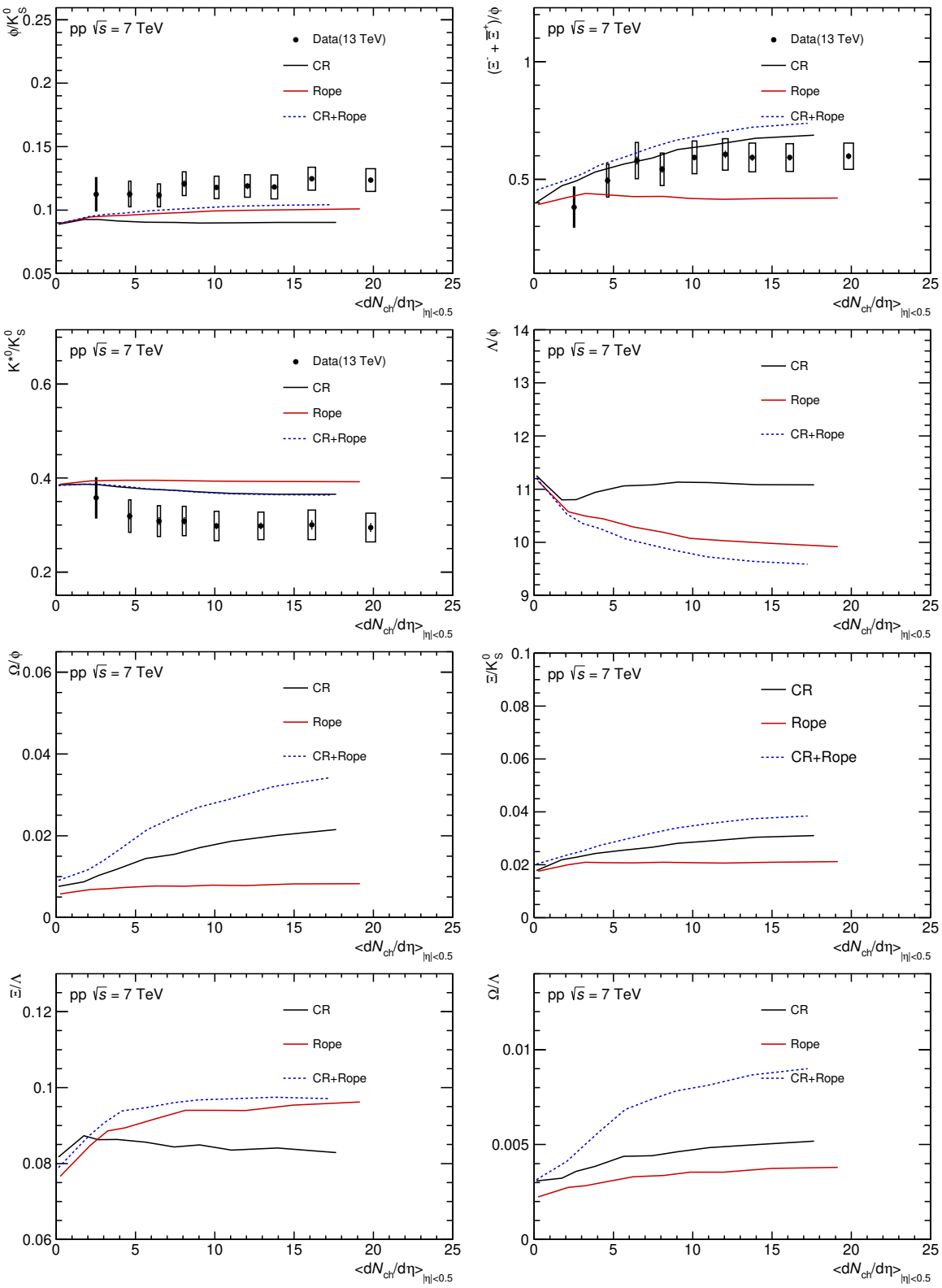

Figure 7: Inclusive integrated yields ratios with $\langle \mathrm{d}N_{\mathrm{ch}}/\mathrm{d}\eta \rangle$.(Data taken from arXiv:1910.14397v1)

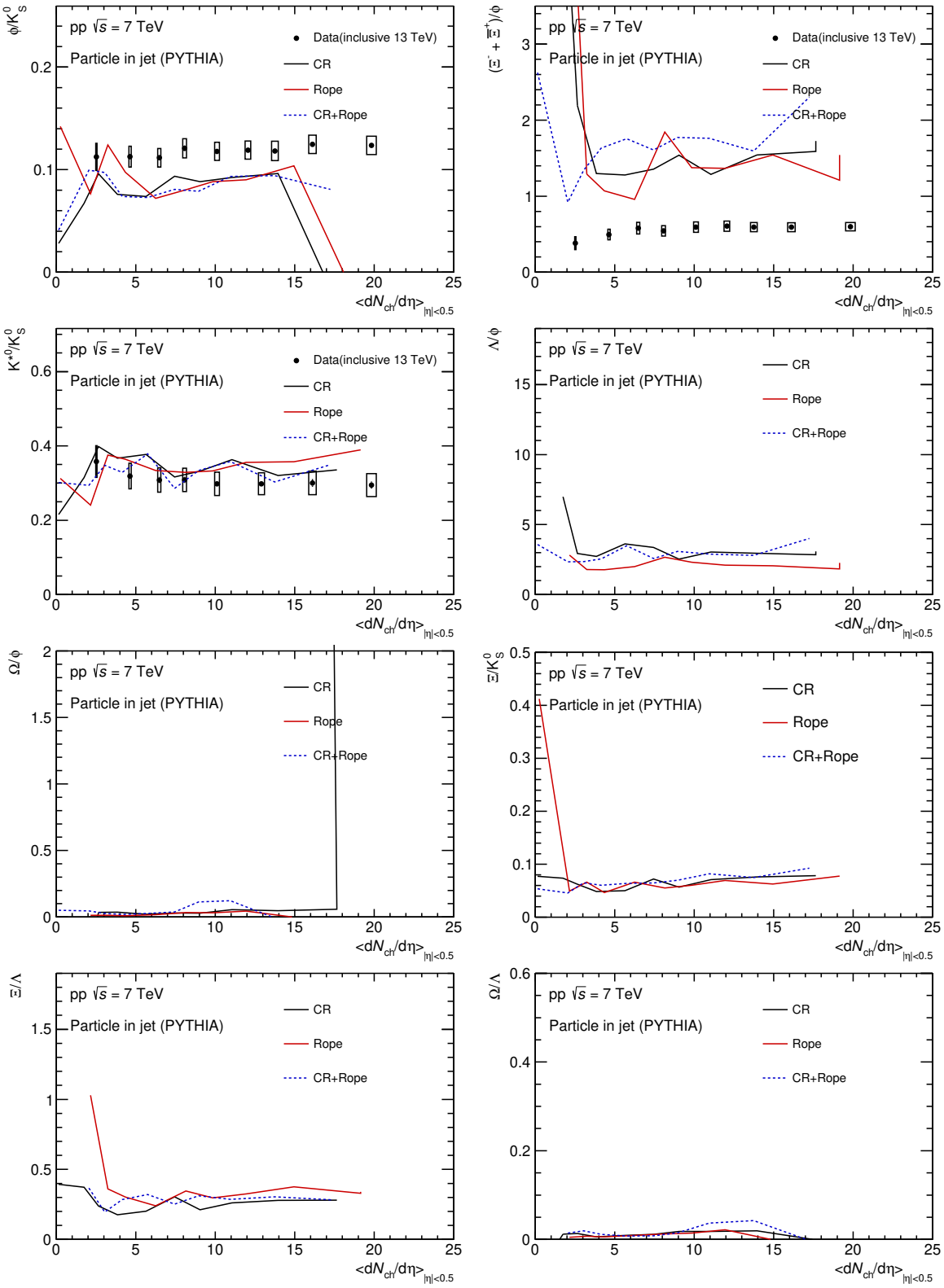

Figure 8: JC integrated yields ratios with $\langle dN_{ch}/d\eta \rangle$.(Data taken from arXiv:1910.14397v1)

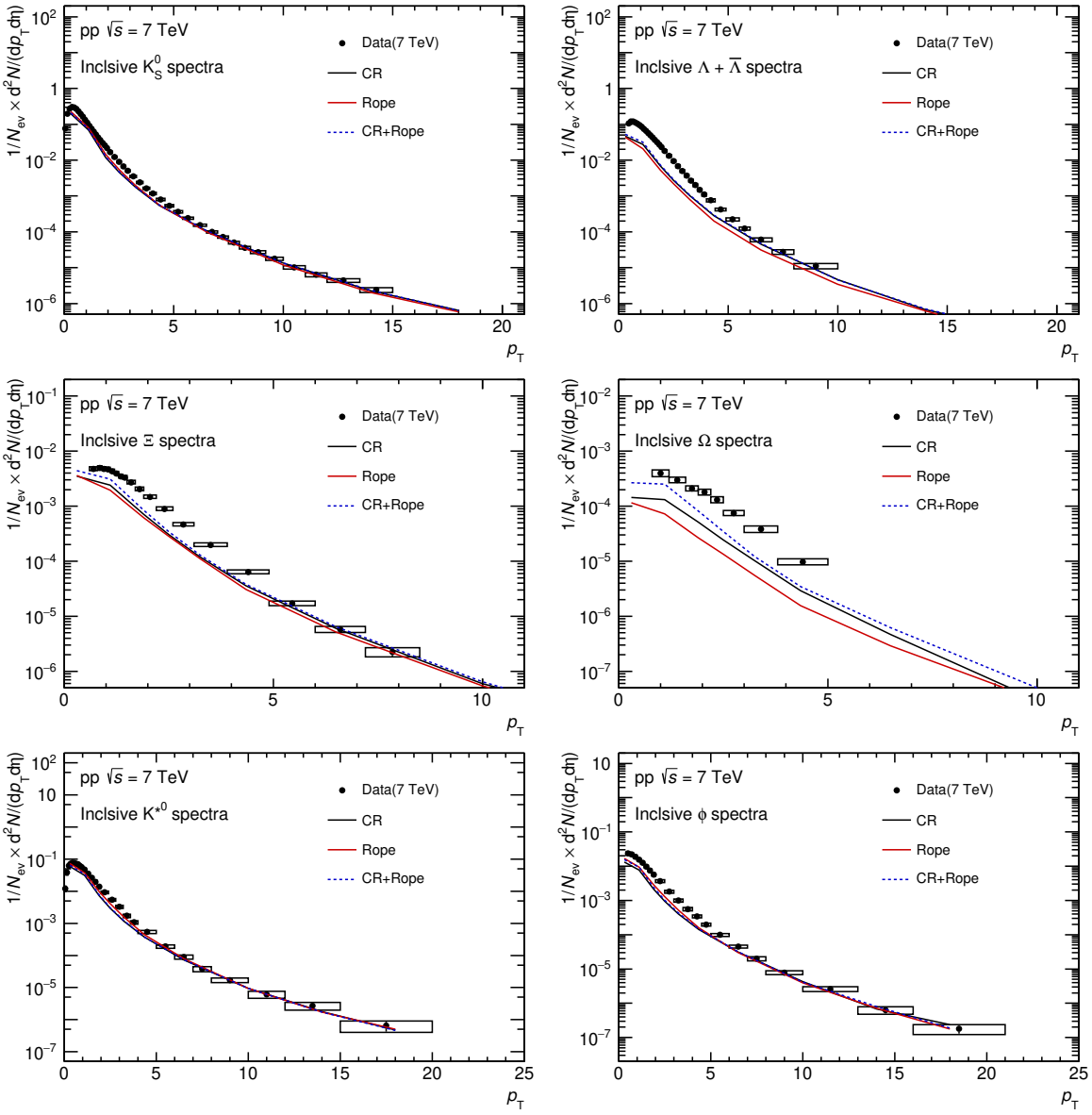

Figure 9: Inclusive particle p_T spectra. The different acceptance with data(for PYTHIA $|\eta| < 0.75$, data $|y| < 0.5$)(Data taken from arXiv:2005.11120, arXiv:1204.0292v3 and arXiv:1910.14410)

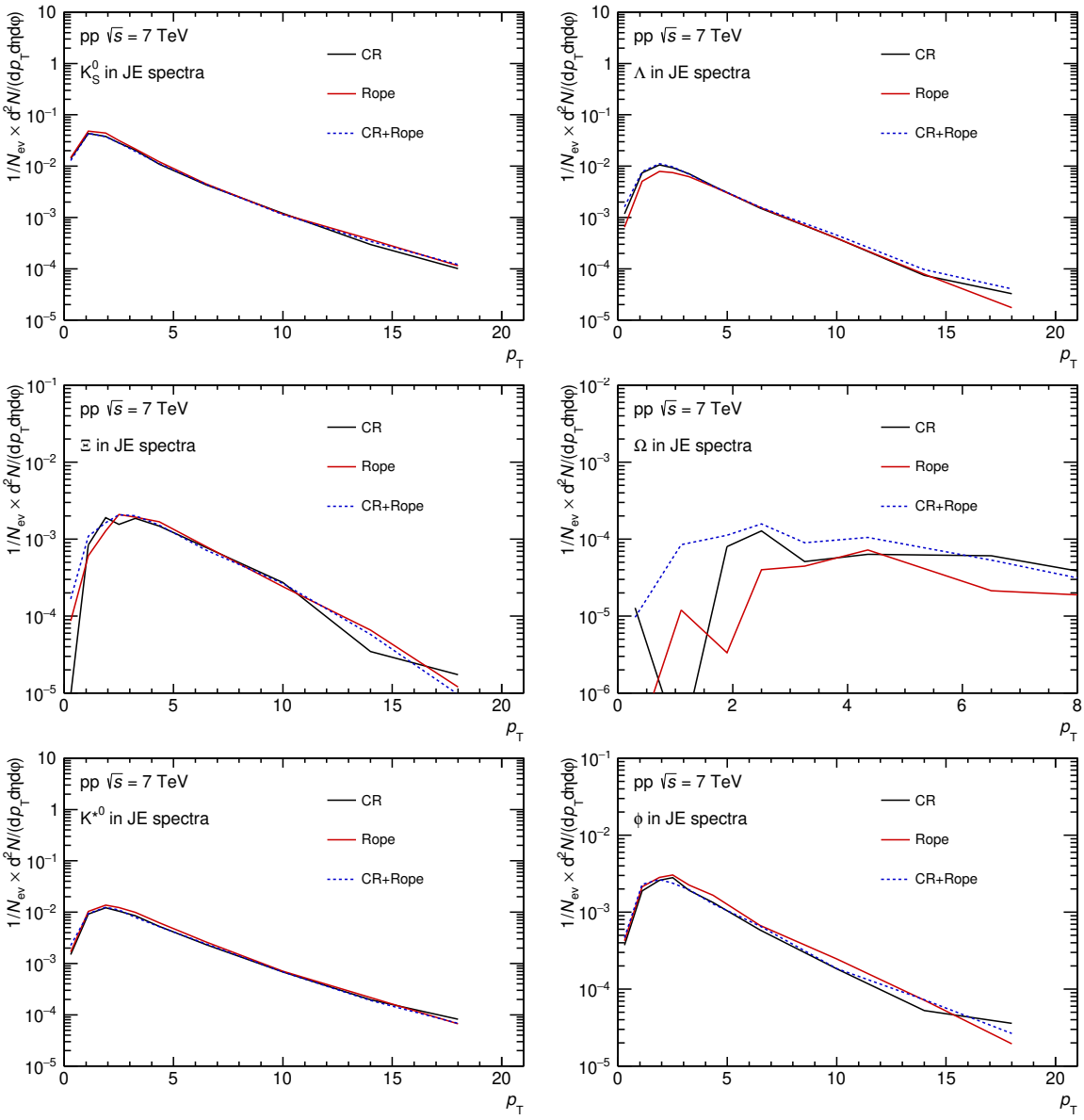

Figure 10: Particle in jet p_{T} spectra.

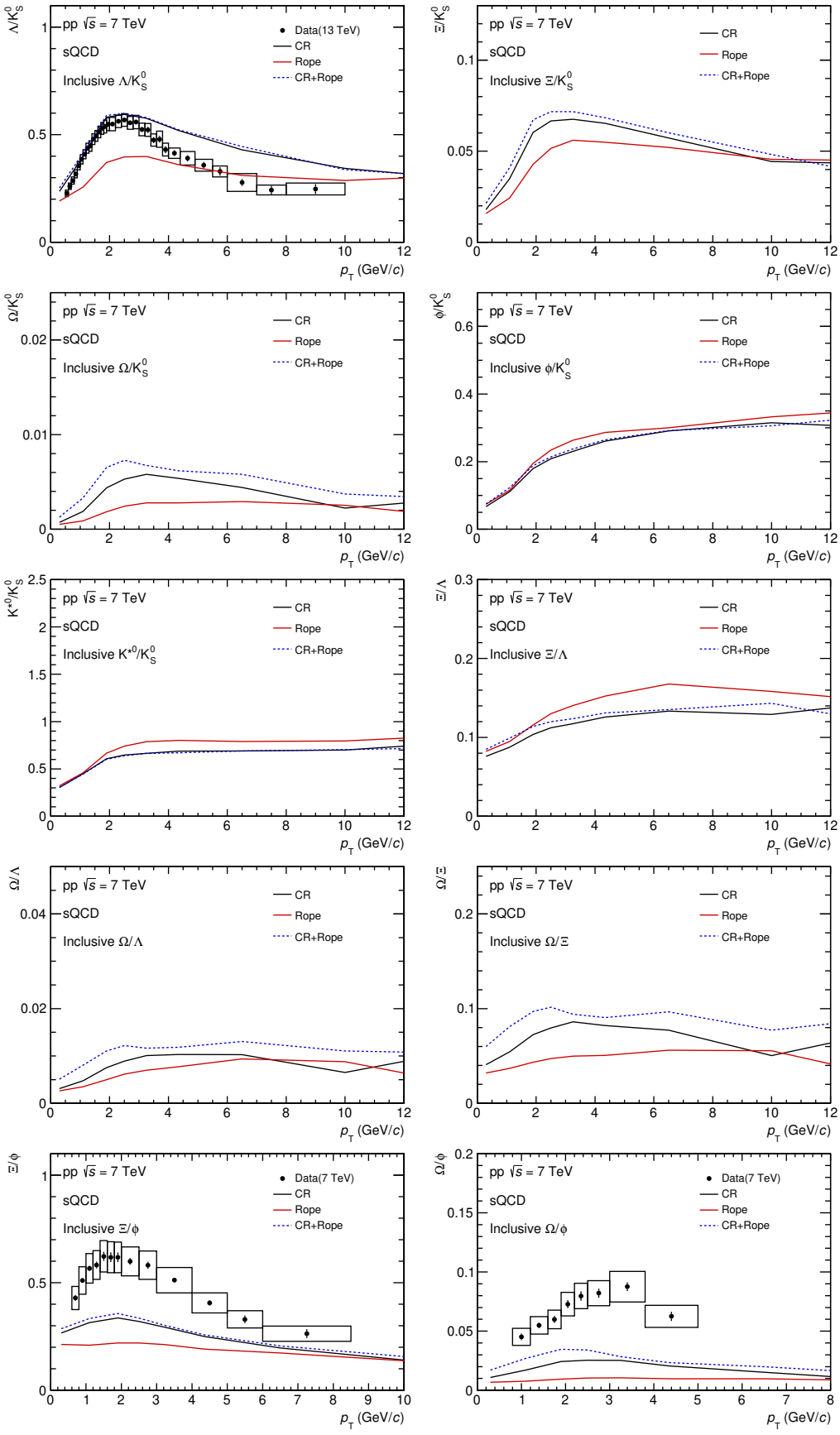

Figure 11: Inclusive particle ratios with p_{T} distribution. (Data taken from arXiv:2005.11120)

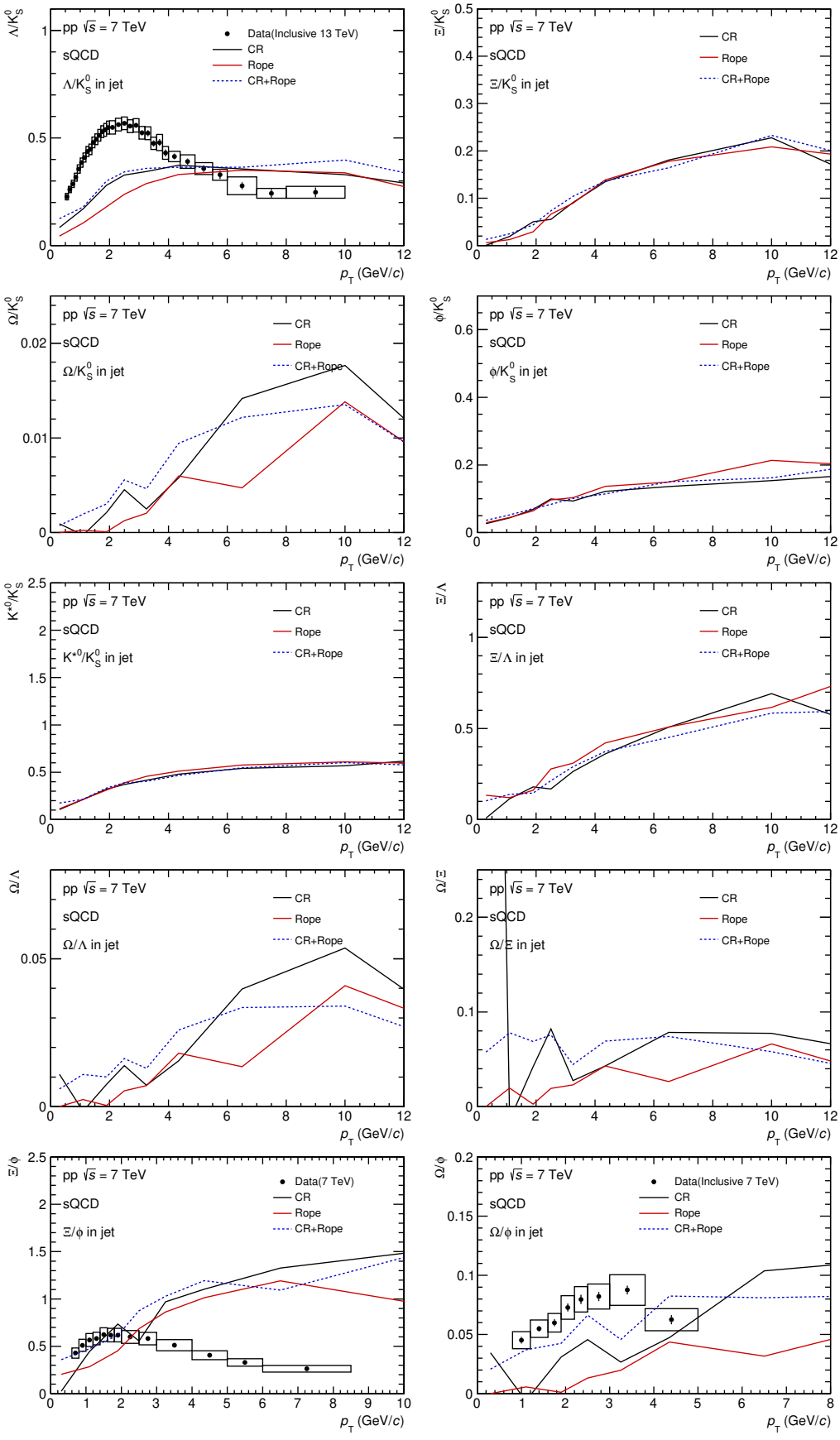

Figure 12: Particle ratios in jet with p_{T} distribution. (Data taken from arXiv:2005.11120)

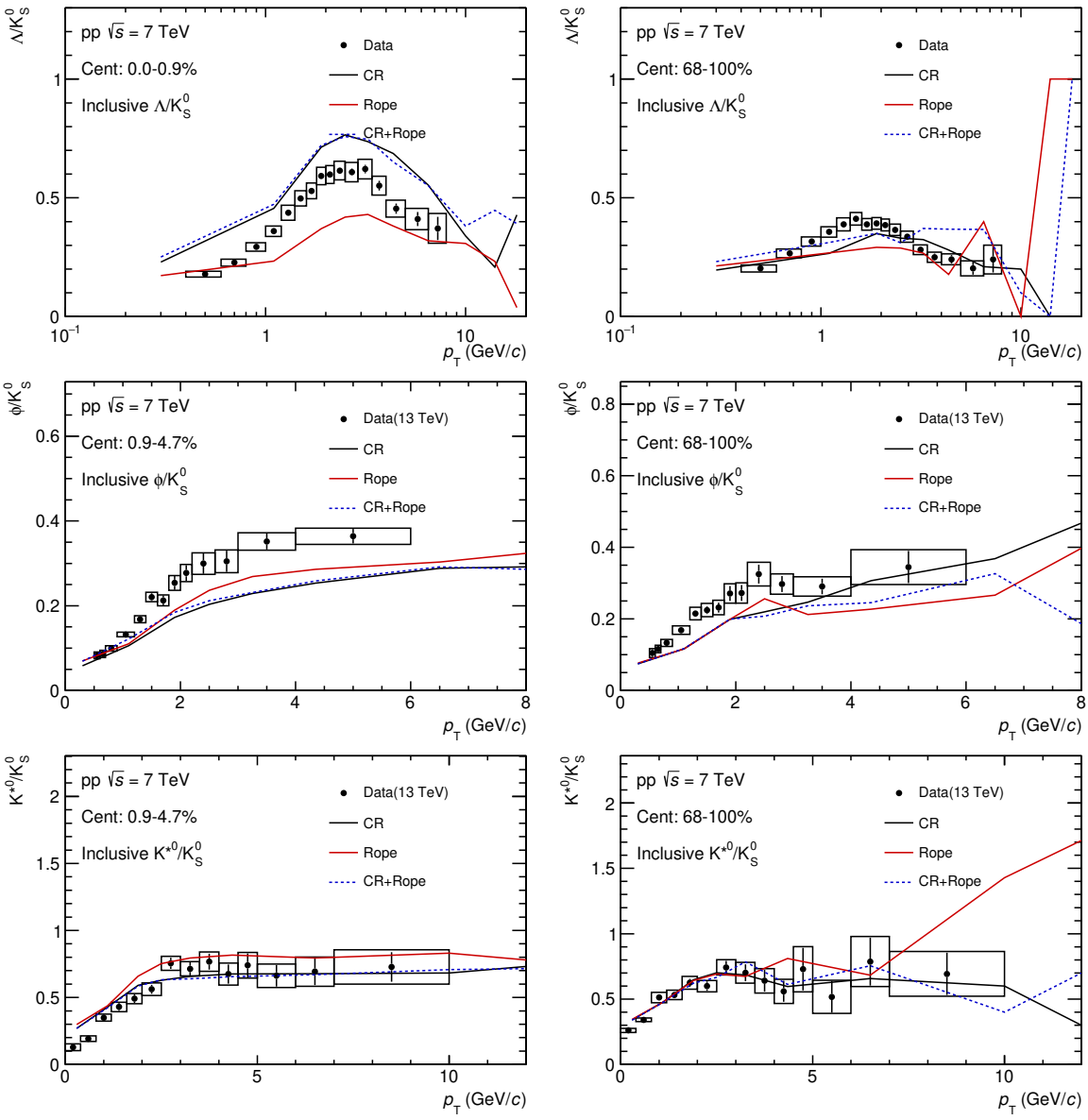

Figure 13: Inclusive particle ratios with p_{T} distribution in center and peripheral centrality bins. (Data taken from arXiv:1807.11321v2 and arXiv:1910.14397v1)

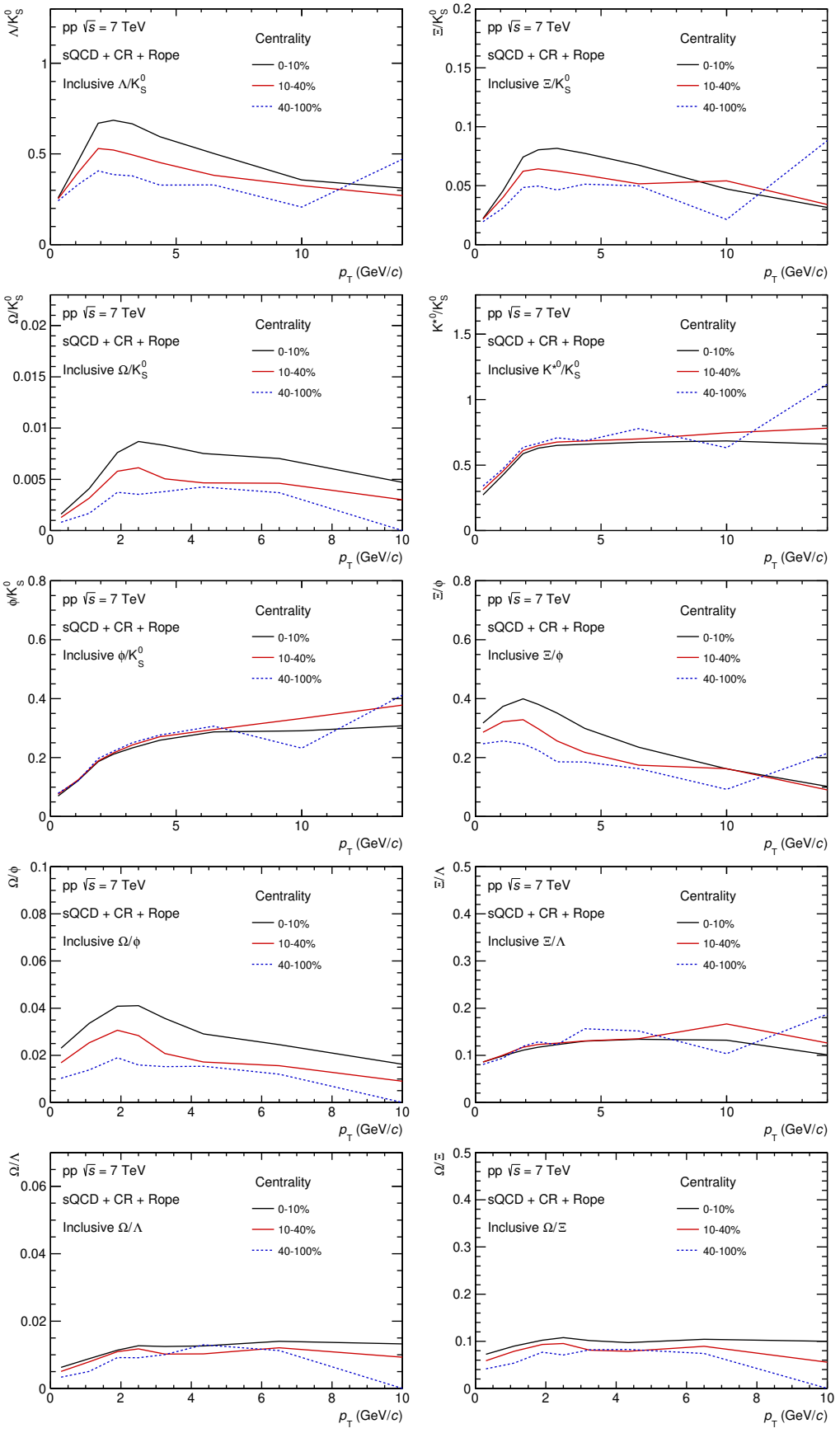

Figure 14: Particle ratios with p_{T} distribution in different centrality bins (CR + Rope).

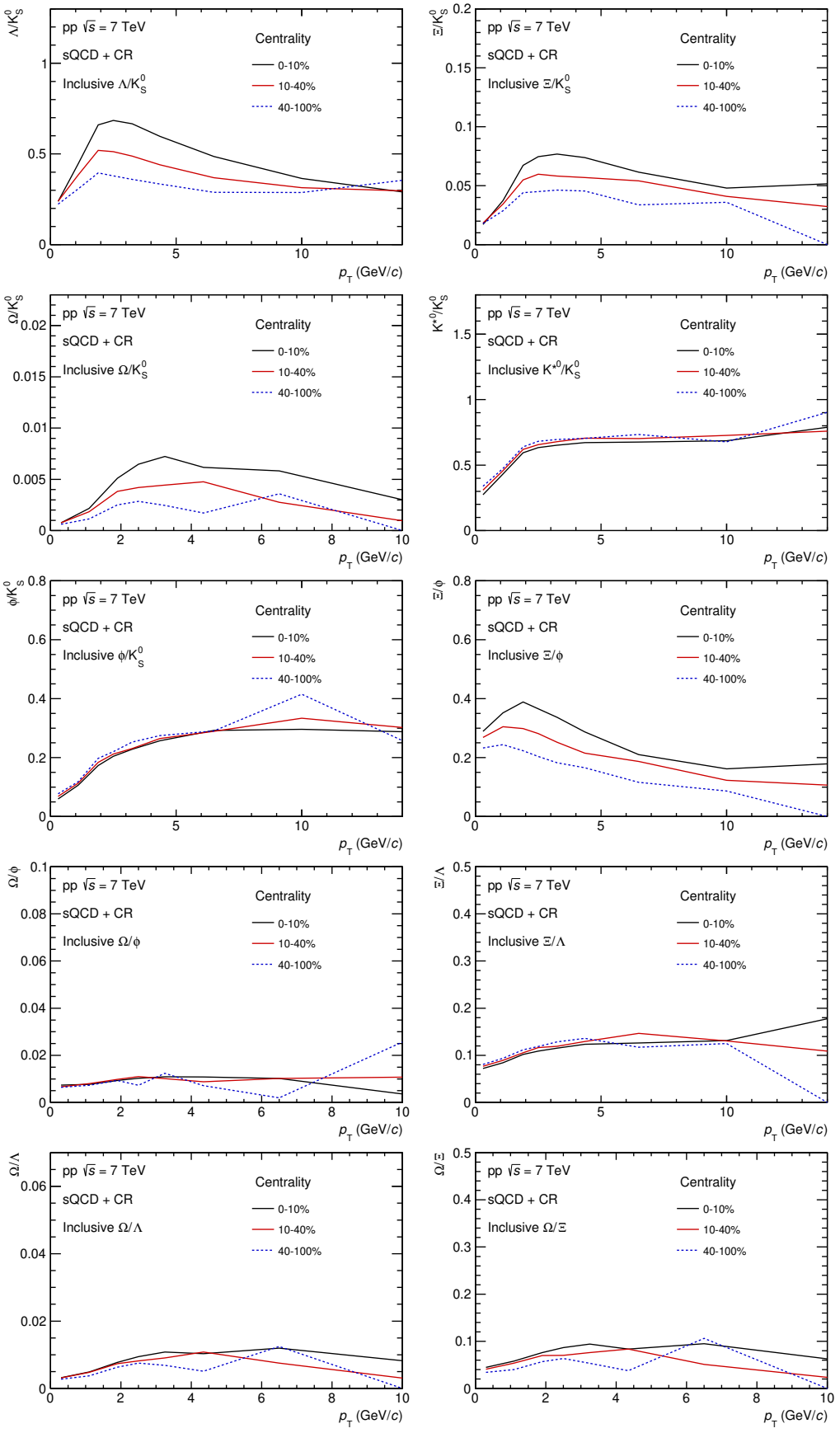

Figure 15: Particle ratios with p_T distribution in different centrality bins (CR).

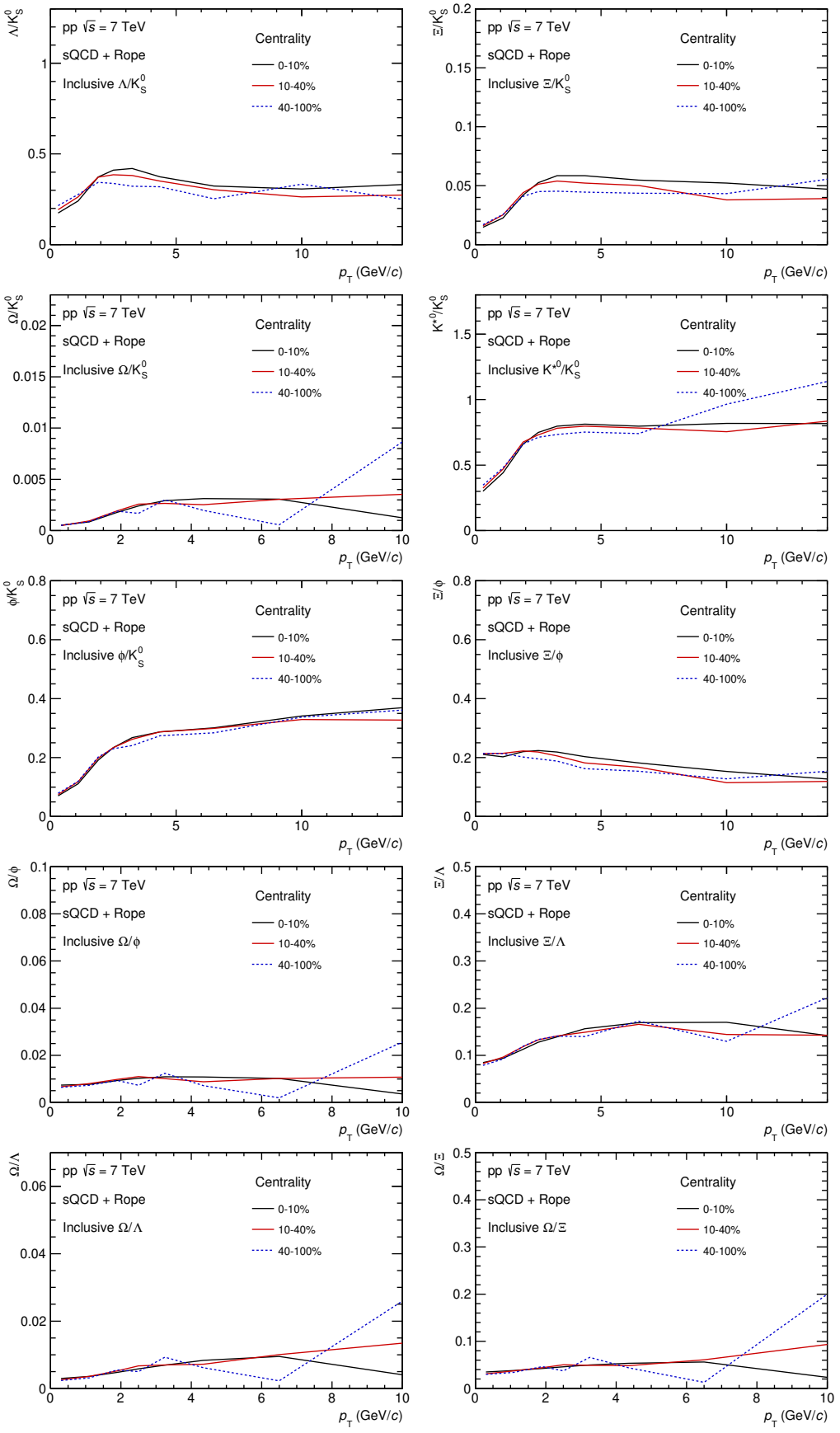

Figure 16: Particle ratios with p_T distribution in different centrality bins (Rope).

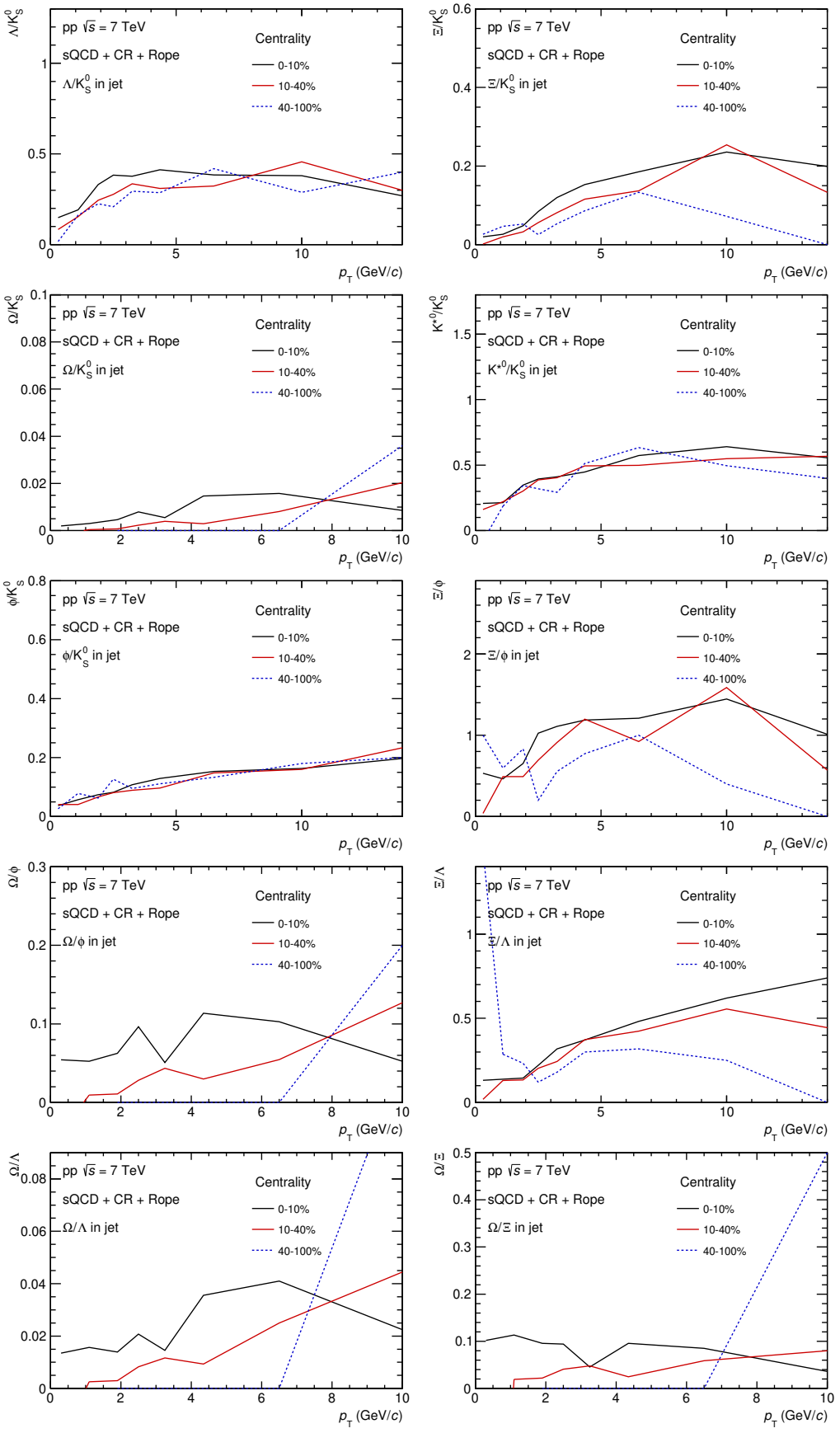

Figure 17: Particle ratios in jet with p_{T} distribution in different centrality bins (CR+Rope).

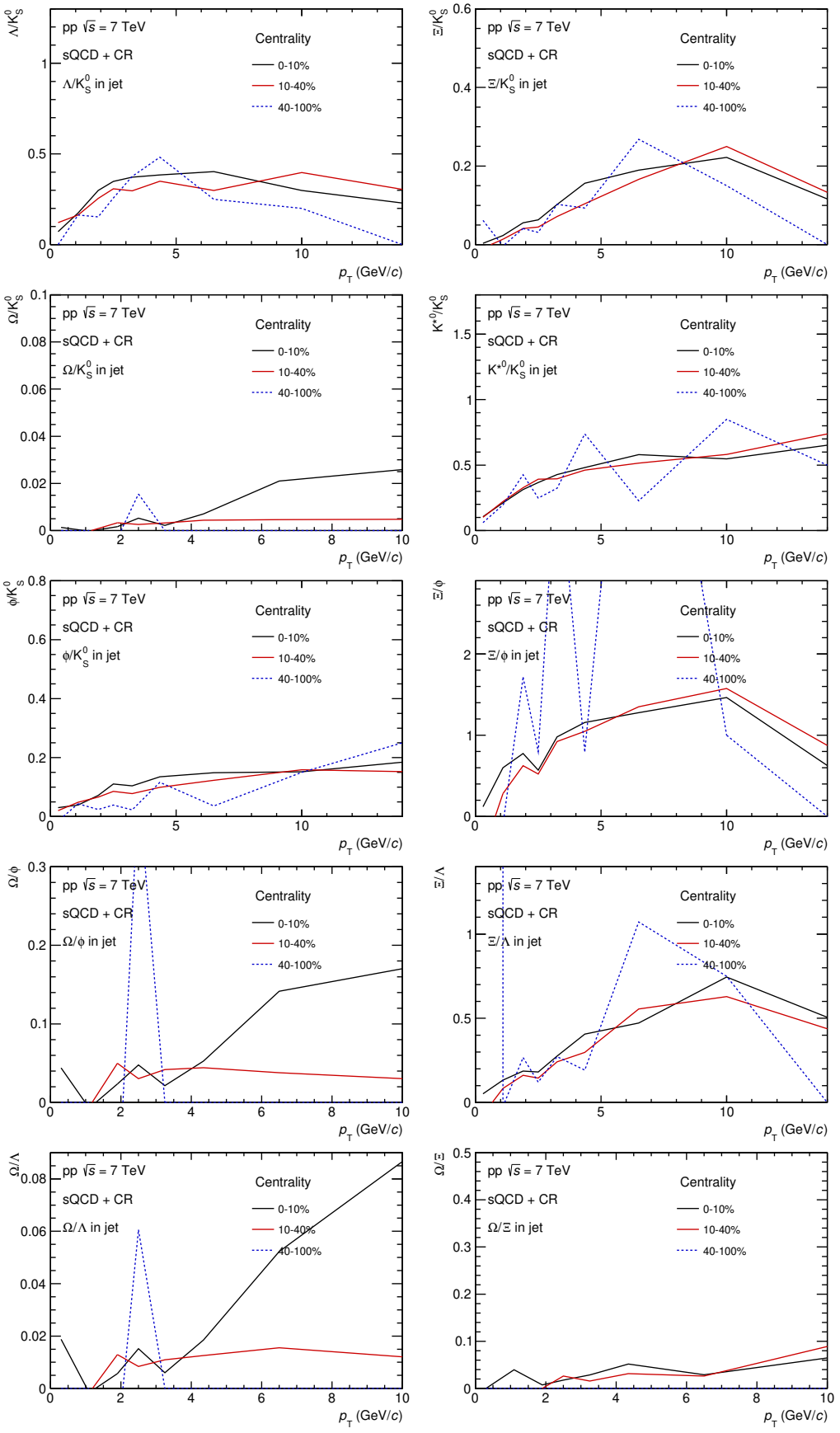

Figure 18: Particle ratios in jet with p_{T} distribution in different centrality bins (CR).

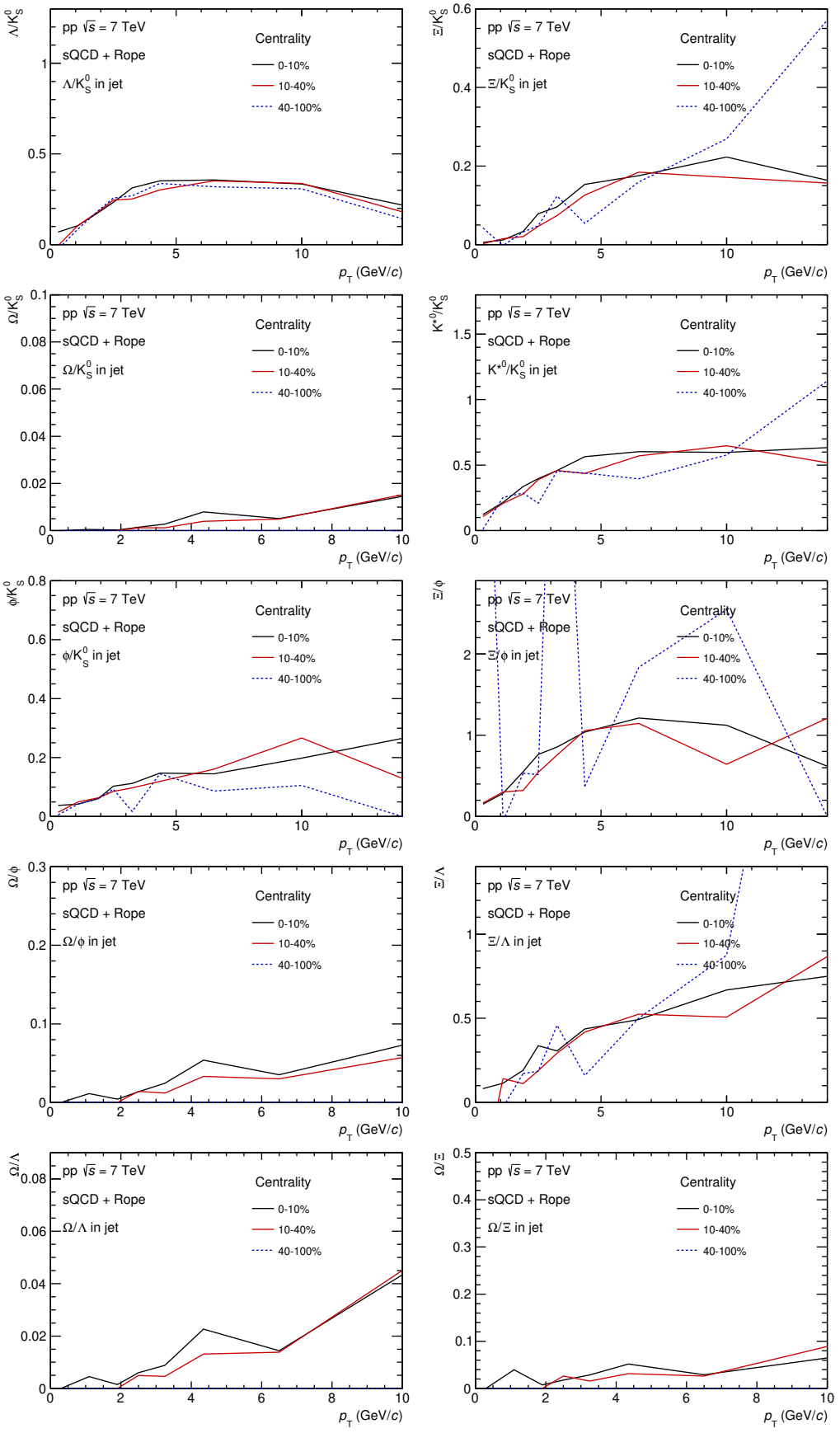

Figure 19: Particle ratios in jet with p_{T} distribution in different centrality bins (Rope).

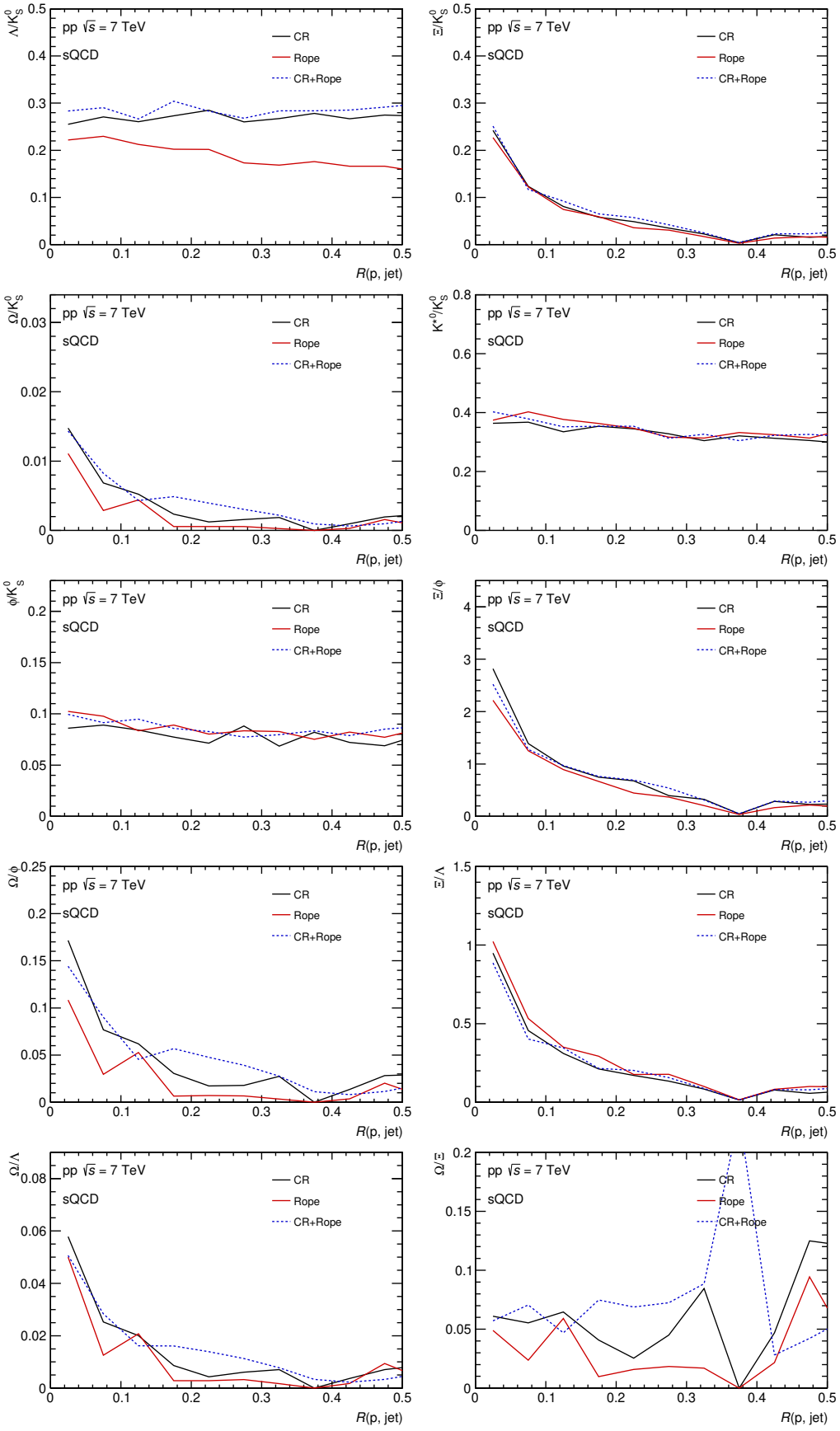

Figure 20: Particle ratios to jet axis range (R(P, jet)) distribution. (The multi-strange hadrons (Ξ, Ω) have strong enhance at small R(P, jet))