Jet R_{eA} studies

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Analysis parameters

- Using $Q^2 > 100$ PYTHIA8 production from `prop.4`:
  `HFandJets/pythia8/ep-10x100-q2-100/`
    - Others collision energies, Q^2 selections are running now
    - May switch to PYTHIA6, but stayed with PYTHIA8 given the evaluators that were available
- Jet finding with anti-k_T R = 0.3, 0.5, 0.8, and 1.0
    - Constituents: $150\text{MeV}/c < p_T < 30\text{GeV}/c$
    - Still having some issues with Centauro, but on to do list
- Charged and calo jets for today

Measuring the R_{eA}

- Using $Q^2 > 100$ PYTHIA8 production from prop.4:
  HFandJets/pythia8/ep-10x100-q2-100/
  - Used subset of stats just for development
- R_{eA} defined as:

$$R_{eA} = \frac{1}{A} \frac{\int_{\eta_1}^{\eta_2} d\sigma/d\eta dp|_{eA}}{\int_{\eta_1}^{\eta_2} d\sigma/d\eta dp|_{ep}}$$
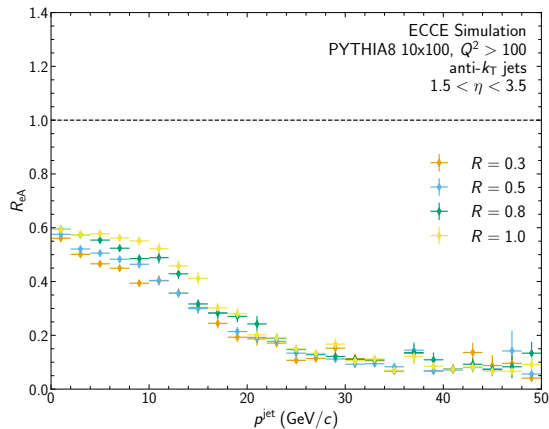
- Note: included the $1/A$ prefactor in these plots.
- Calculating ReA using nPDF scaling as proposed by Nathan
  - Using EPPS16nlo_CT14nlo_Au197 so far
  - Could add other nPDFs, but variations on a single nPDF may be enough
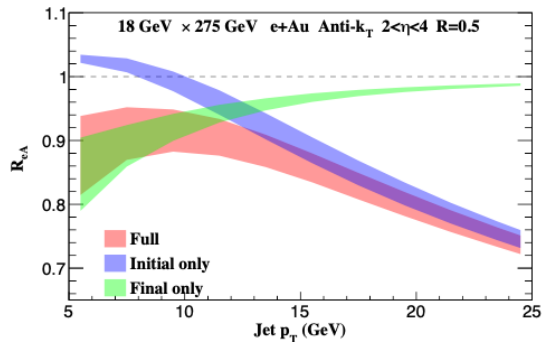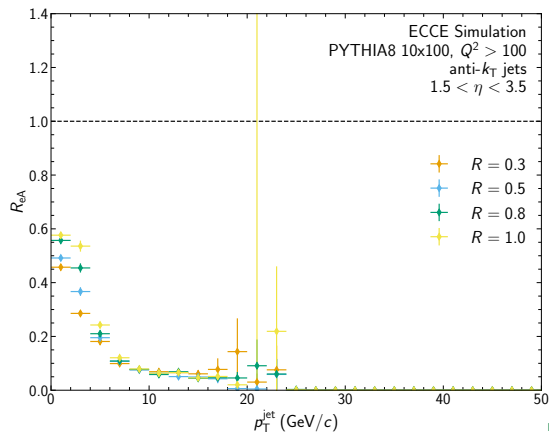
Charged jet R_{eA}

Barrel
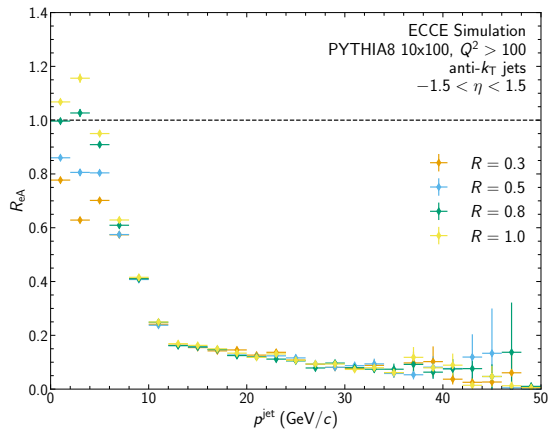
Forward

Charged jet R_{eA}
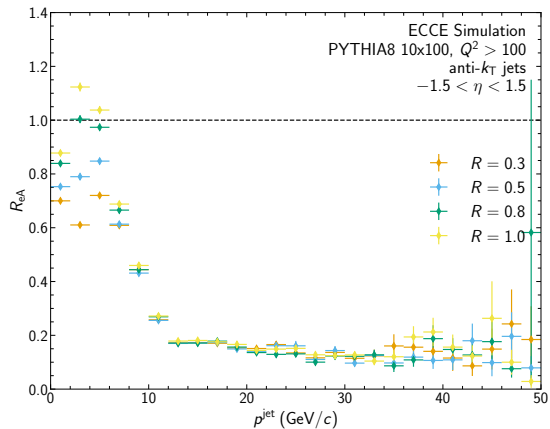
Shape similar, but overall scale is too low

Forward

Yellow report

Charged jet R_{eA} - true

Barrel

Forward
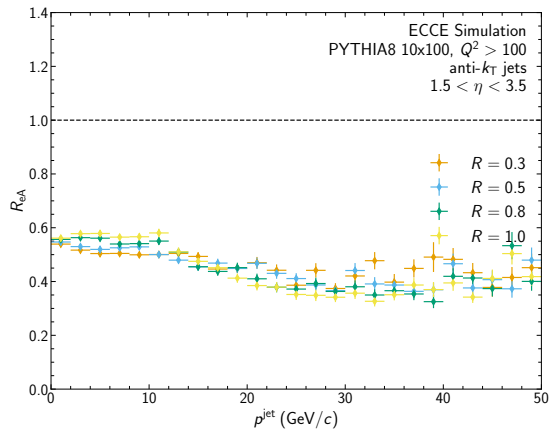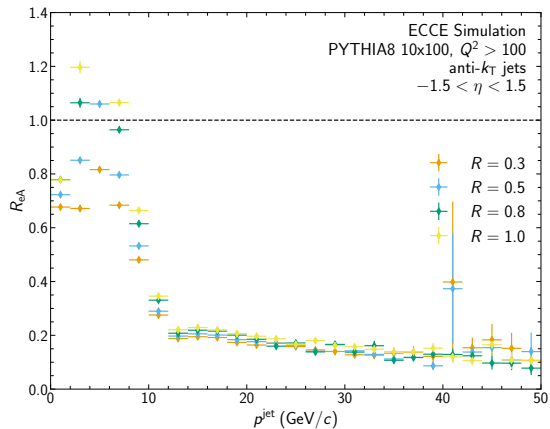
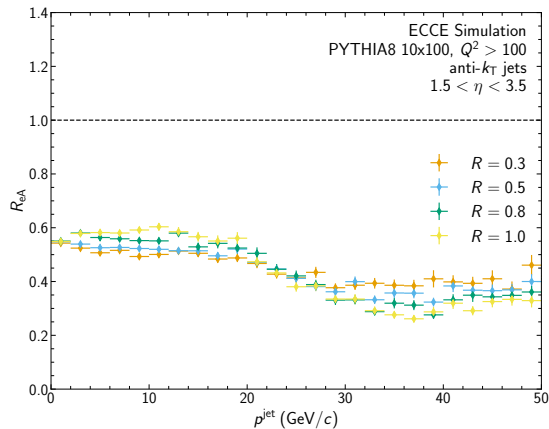# Calo jet R_{eA}

Barrel
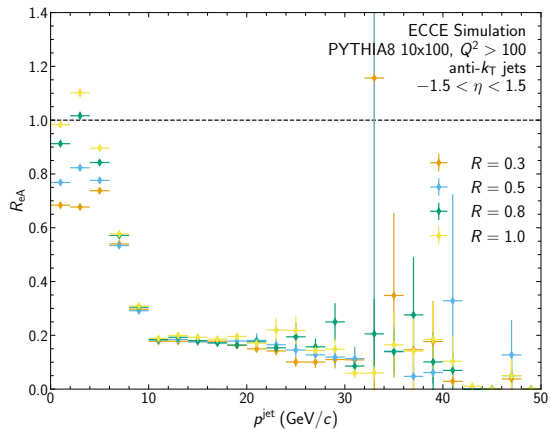
Forward
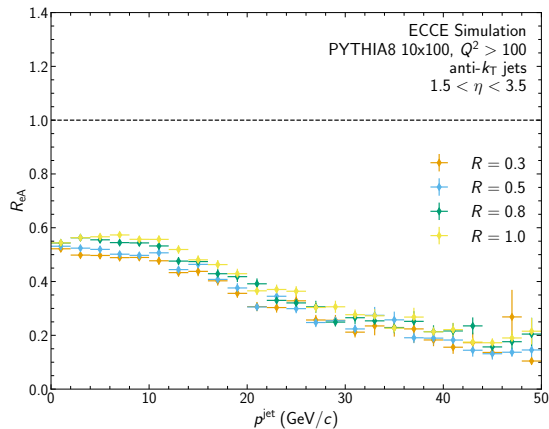
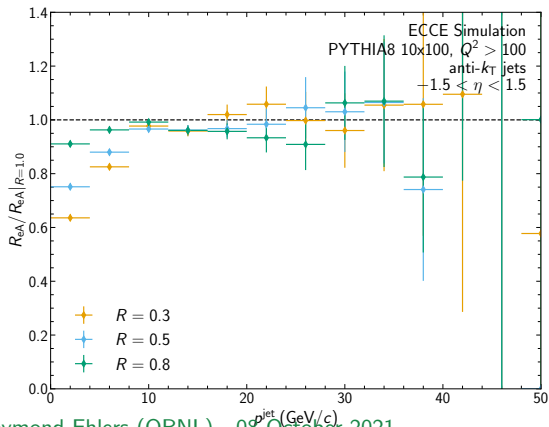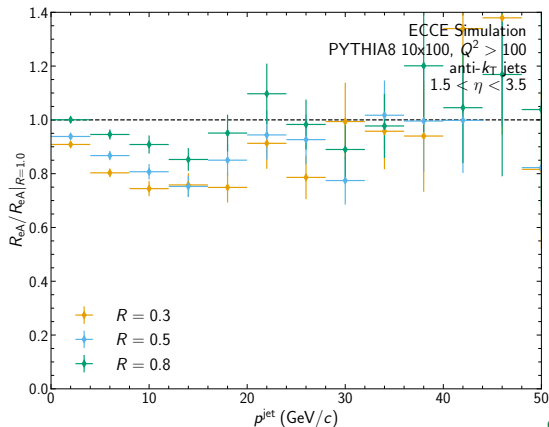# True jet R_{eA}

Barrel

Forward

R_{eA} ratios: charged jets

Order seems right(ish), but modification seems too small. Probably scale related

Barrel

Forward

Next steps

- Continue checks on overall scale
- Finish move from anti-k_T $\rightarrow$ Centauro
- Finish running rest of stats, systems
- Adding PDF variations for uncertainty on PDF
- Use more detector level kinematics(?)
  - Only using for eA scaling at the moment

Backup

A Slide

- Some
- Content

- For an image:
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