Neutral meson production in p-Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV with ALICE at the LHC

Tsubasa Okubo on behalf of the ALICE collaboration

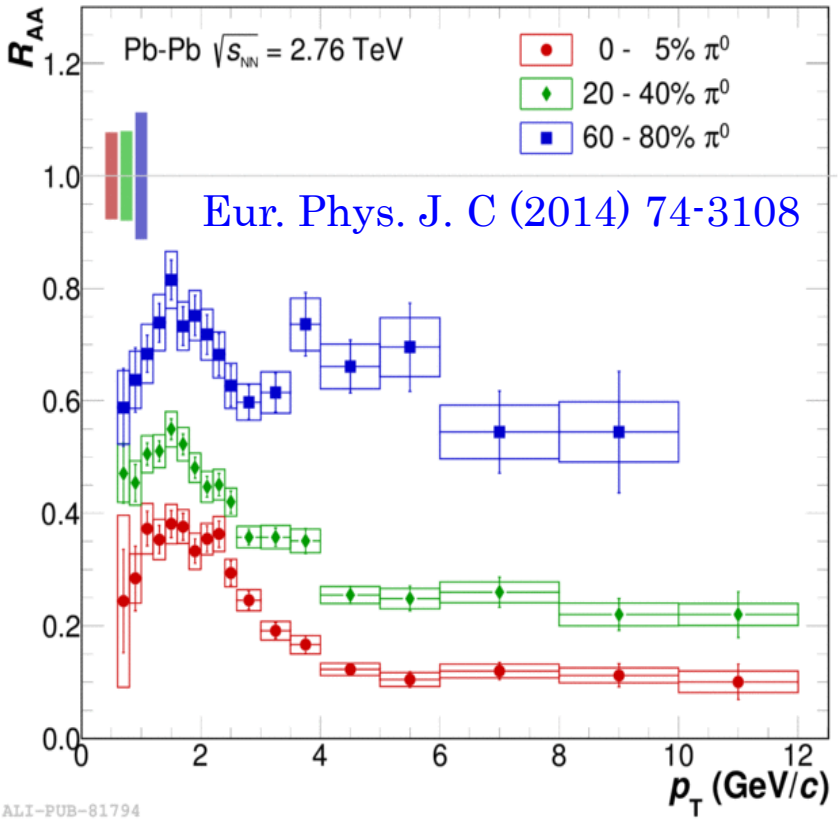
Neutral meson measurement is useful to understand particle production.

- Strong suppression of π^0 has been observed in central Pb-Pb collisions.

  → The suppression mechanism can be explained by various processes involving transport properties of the QCD medium and initial-state effects.

Studies in p-Pb collisions provide us with new information

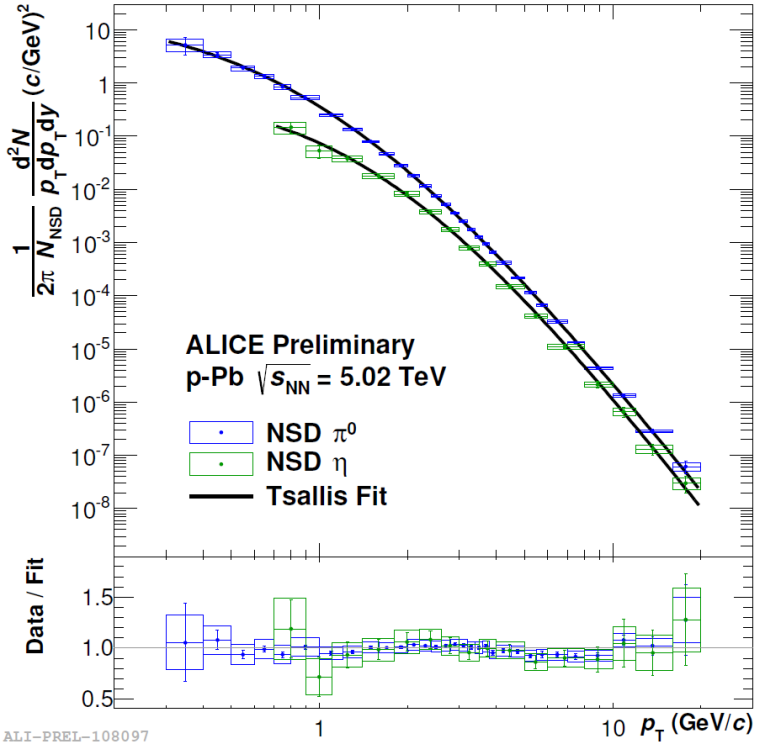
→ Disentangle the suppression coming from initial condition of colliding nuclei from final effects in Pb-Pb collisions.

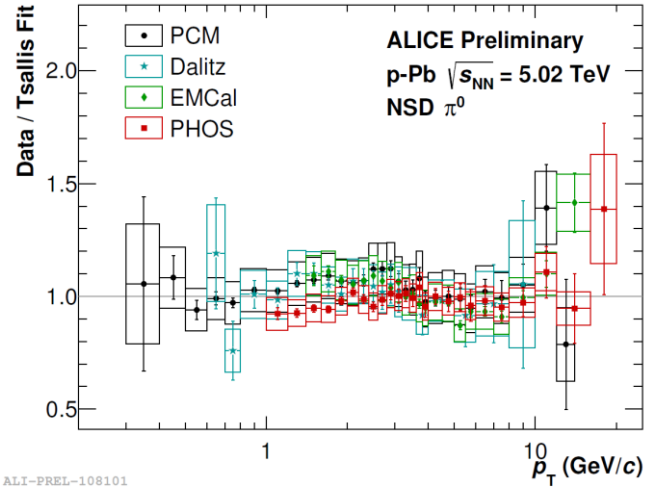


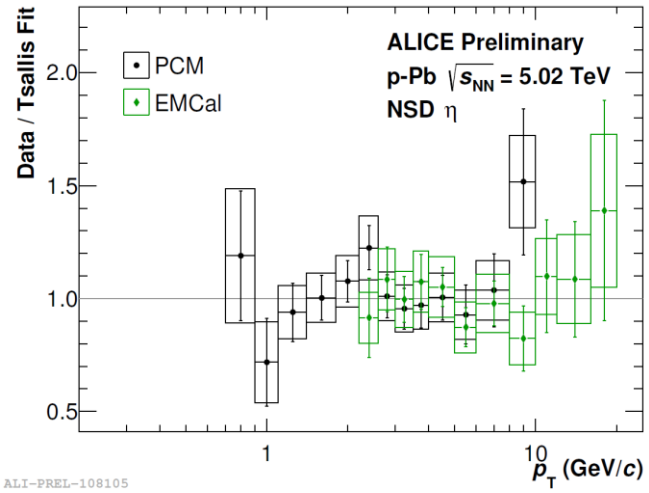
Invariant Neutral Meson Yields

ALICE measures π^0 and η meson with different methods

- Calorimetry (PHOS (PbWO crystals) and EMCal (Pb-scintillators sampling calorimeter))
- Photon Conversion Method with ALICE tracking detectors in 2γ and γ-Dalitz channels

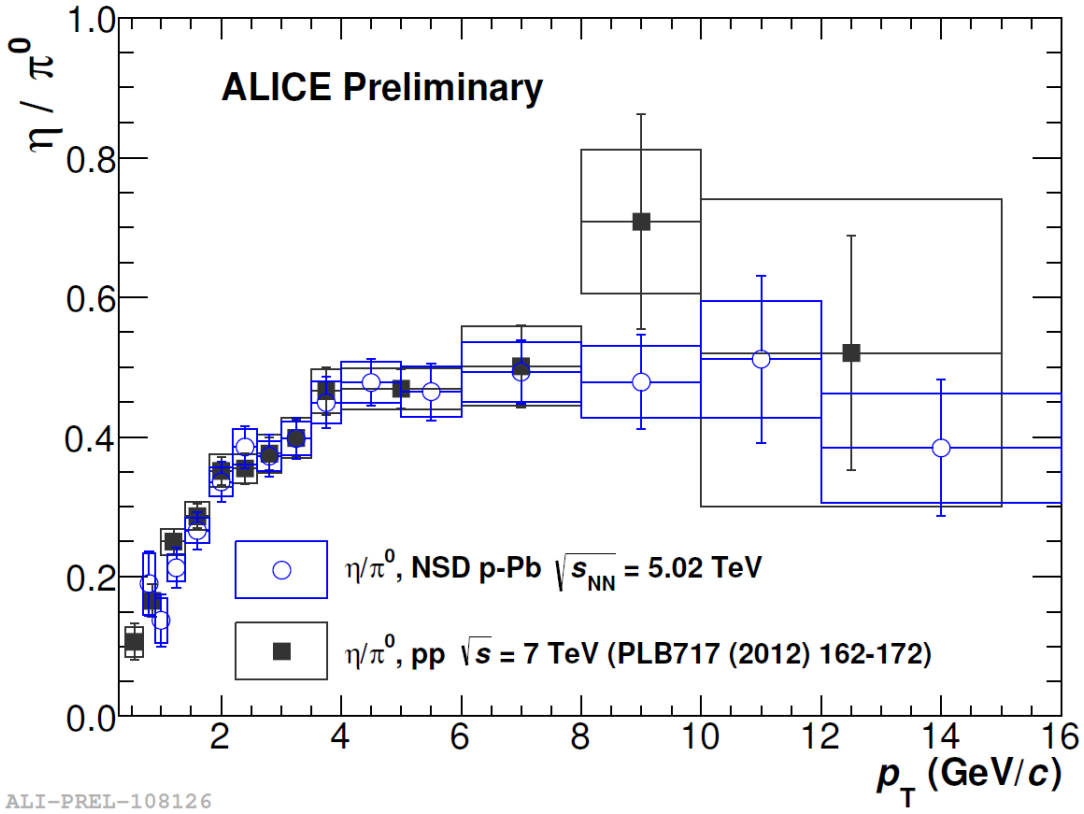






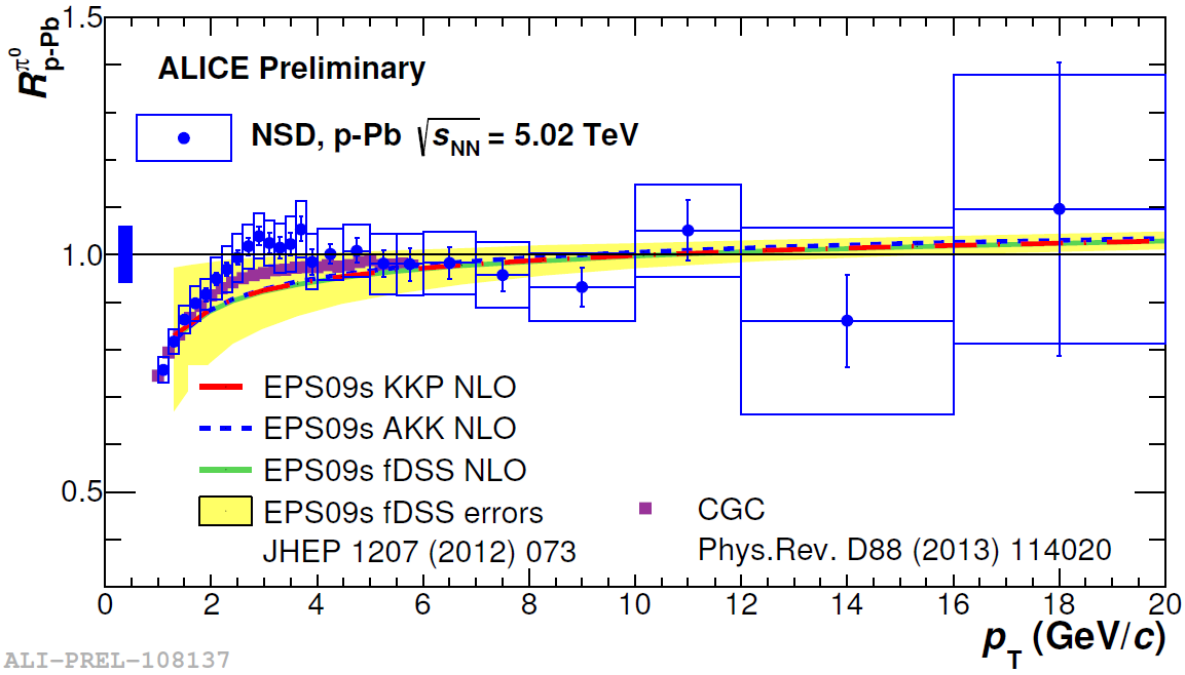
- Spectra are weighted according to their uncertainties and combined.
- Independent spectra are consistent.

η/π^0 Ratio



- η/π^0 ratio is calculated separately for PCM and EMCal and combined
  → Cancellation of material budget error for PCM
- η/π^0 ratio consistent with PCM result in pp collisions at $\sqrt{s}$ = 7 TeV
  → Ratio does not depend on the collision system

Nuclear Modification Factor $R_{p-\mathrm{Pb}}^{\pi^0}$



- No reconstructed pp reference available for $\sqrt{s}$ = 5.02 TeV

  → Use published π^0 spectra in pp collisions at $\sqrt{s}$ = 2.76 TeV and $\sqrt{s}$ = 7 TeV for interpolation with power law
- Individual $R_{p-\mathrm{Pb}}^{\pi^0}$ are produced and combined.

  → Systematic uncertainties partially cancel out
- $R_{p-\mathrm{Pb}}^{\pi^0}$ is consistent with unity above 2 GeV/c and agrees with model predictions.
- The impact of the fragmentation largely cancels between pp and p-Pb, leaving the initial state and extra final state effects in p-Pb.