

Probing the ρ^0 -Proton interaction using femtoscopic correlations at the LHC

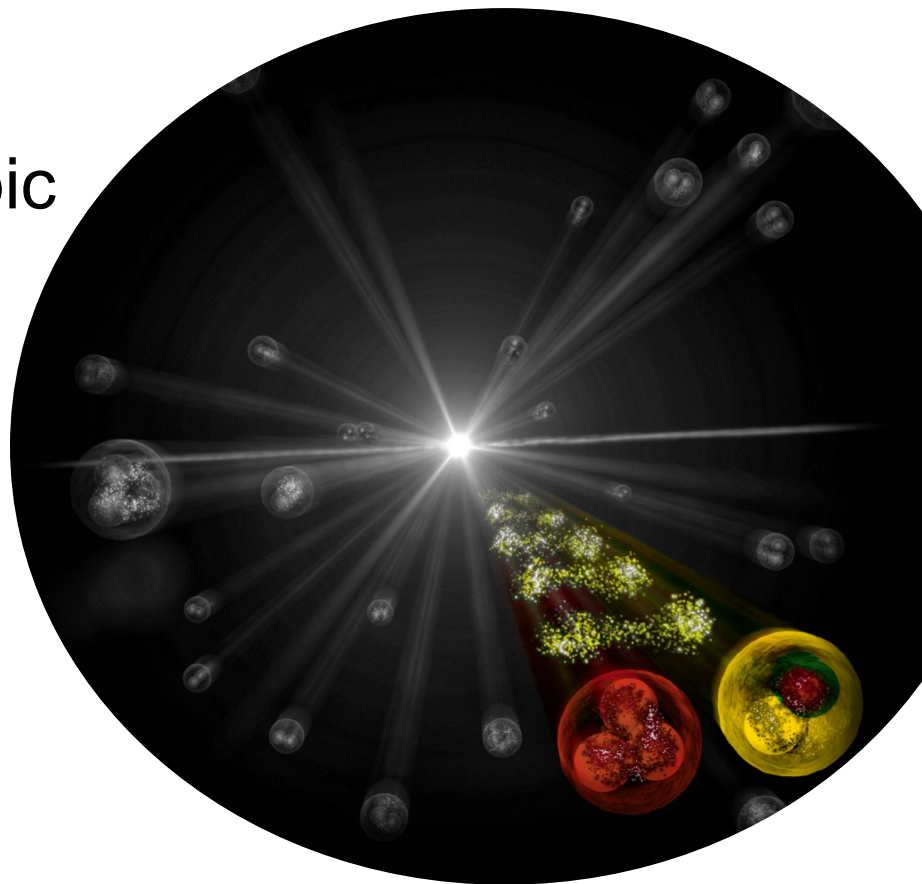
Based on arXiv:2508.09867 (2025)

M. Korwieser

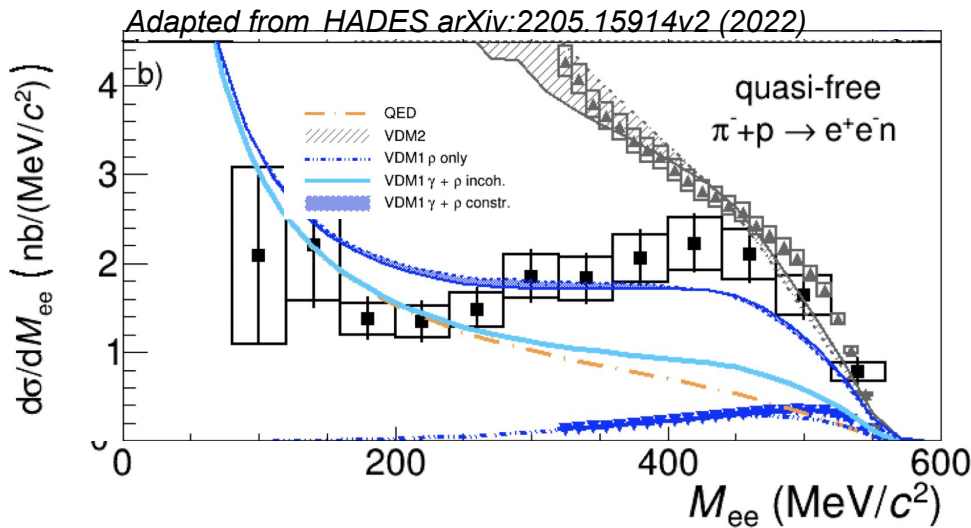
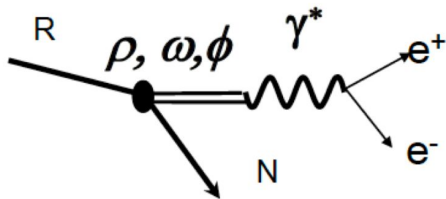
Technical University of Munich, E62

19th of January 2026

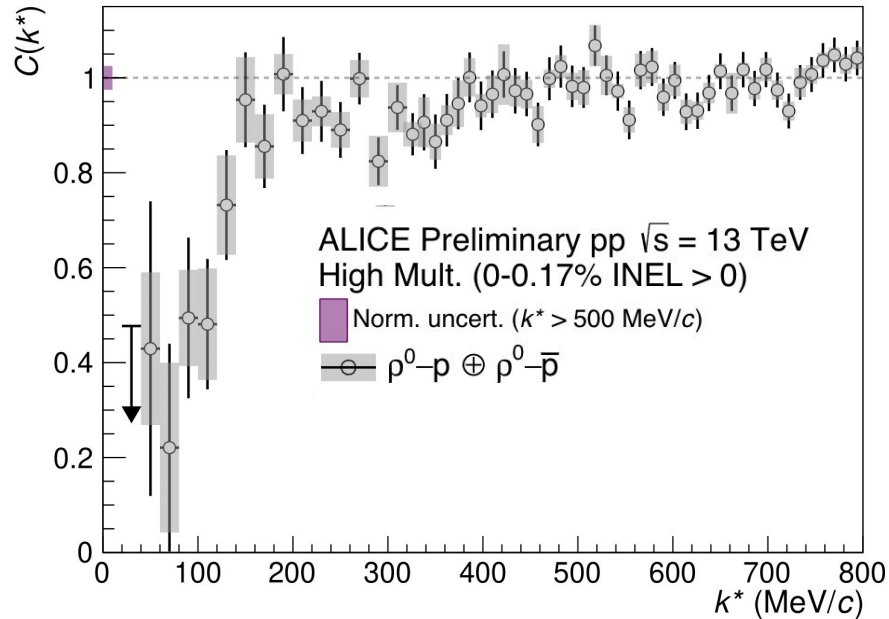
62nd Bormio conference



Vector meson nucleon interaction



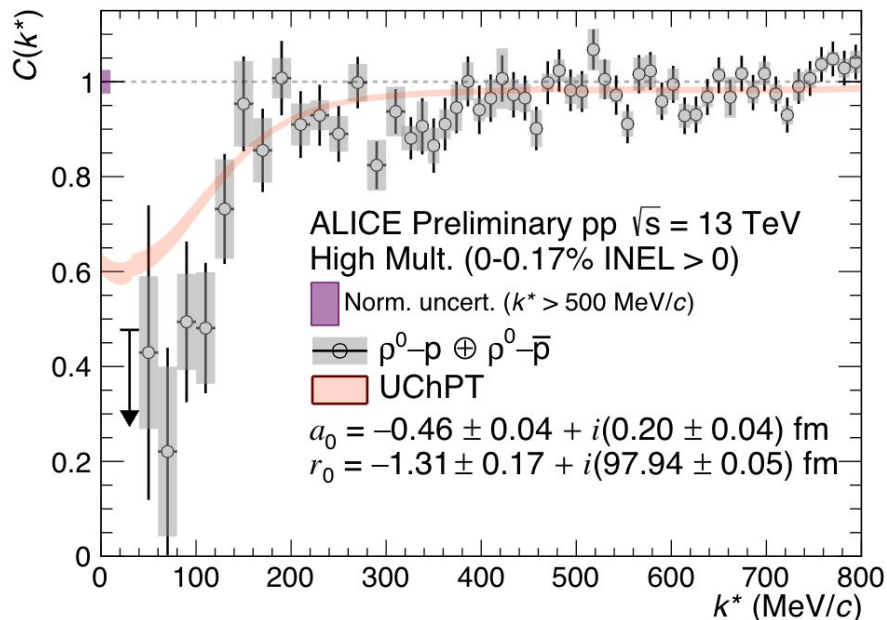
- Usually probed by Vector Meson Dominance (VMD¹) Models
 - 1: J. J. Sakurai, *Phys. Rev. Lett.* 22, 981 (1969)
 - Hadronic contribution to the γ propagator
 - Off-shell vector mesons
- Test of VMD at HADES
 - Low-energy beams (π)
 - M_{ee} excess compared to QED reference
- Excess modeled
 - With low-lying intermediate resonances (R) (N(1440), N(1520), N(1535) in a $R\gamma^*N$ vertex)
- But how can one access the interaction between the ρ^0 and nucleon directly?



- Use femtoscopy at to obtain the ρ^0 -p momentum correlation
- **4 σ deviation** from non-interaction baseline

1: A. Feijoo, MK, L. Fabbietti PRD 111 (2025) 1, 014009

2: ALICE PRL 127 (2021)



- Use femtoscopy at to obtain the ρ^0 -p momentum correlation
- **4 σ deviation** from non-interaction baseline
- Provides new experimental constraints for UChPT calculations^{1,2}
- Implications
 - Benchmark VMD implementations
 - Basis for Chiral symmetry restoration studies at finite density
 - Offers collider based insight into QCD spectrum

1: A. Feijoo, MK, L. Fabbietti PRD 111 (2025) 1, 014009

2: ALICE PRL 127 (2021)