## WPCF 2024 - 17th Workshop on Particle Correlations and Femtoscopy



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## Investigating the nature of the K\*0(700) state with pi+- K0s correlations with ALICE at the LHC.

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The first measurements of femtoscopic correlations with the particle-pair combinations  $\pi^{\pm} K_S^0$  in pp collisions at  $\sqrt{s} = 13$  TeV are reported by ALICE. It is shown that it is possible to study the elusive  $K_0^*(700)$  particle that has been considered a tetraquark candidate for over forty years. Boson source parameters and final-state interaction parameters are extracted by fitting a model assuming a Gaussian source to the experimentally measured two-particle correlation functions. The final-state interacting amplitude, defined in terms of a mass and a coupling parameter, decaying into a  $\pi^{\pm} K_S^0$  pair. The extracted mass and Breit-Wigner width, derived from the coupling parameter of the final-state interaction are found to be consistent with previous measurements of the  $K_0^*(700)$ . The small value and increasing behavior of the correlation strength with increasing source size support the hypothesis that the  $K_0^*(700)$  is a tetraquark state. This latter trend is also confirmed via a simple geometric model that assumes a tetraquark structure of the  $K_0^*(700)$  resonance.

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