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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^0_S 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 interaction is modeled through a resonant scattering amplitude, defined in terms of a mass and a coupling parameter, decaying into a $\pi^{\pm}$ K^0_S 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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