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## Search for Exotic Particles in Multi-Prong Central Exclusive Production in pp Collisions at the STAR Experiment

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Central Exclusive Production (CEP) refers to a class of processes in which two protons interact through the exchange of colorless objects, such as photons or pomerons, resulting in the production of an isolated hadronic system in the central region, while both protons remain intact. In this analysis, CEP events are studied in proton–proton collisions at  $\sqrt{s} = 510$  GeV recorded by the STAR experiment. Fiducial selections based on the Roman Pot acceptance are applied to ensure full kinematic containment and precise reconstruction of the scattered protons. Exotic hadrons are investigated in the exclusive  $\pi^+\pi^-$ ,  $K^+K^-$ , and  $\pi^+\pi^-\pi^+\pi^-$  final states through amplitude-based fits employing coherent and incoherent wave components that include spin and angular-momentum dependencies. Differential studies as a function of the transverse-momentum difference between the scattered protons - commonly referred to as `\textit{glueball filtering}` - are performed to probe the underlying production dynamics and explore kinematic regions that may favor gluon-rich resonance formation (glueball-like). Simulations using the GRANIITTI CEP event generator incorporate various exotic hadron resonances, providing a theoretical framework for interpreting the observed structures and validating the amplitude model.

**Authors:** GIRI, Aranya (Univ. of Houston); STAR COLLABORATION

**Presenter:** GIRI, Aranya (Univ. of Houston)

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