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Physics Opportunities from the $pp \to KK\Lambda\Lambda$ Reaction Channel at HADES

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Understanding the physics and inner workings of neutron stars has been a longstanding issue since their discovery in 1967. These incredibly dense stellar objects are formed from the collapse of supergiants, finding equilibrium by a neutron degeneracy arising in its interior. The development of accurate equation of state models has been hindered by the energetically favoured appearance of hyperons within neutron star cores due to the limited understanding of the ways in which they interact.

The femtoscopy method has proved to be a promising avenue for probing these hyperon interactions, where the HADES experiment at GSI has contributed with measurements. For future hyperon studies, a kinematic fitter has been developed at Uppsala University as part of HADES' software tools to improve the reconstruction of hyperons, an upgrade that allows for further femtoscopy studies as well. To be presented is a simulation project which aims to determine the performance of this fitter on the $pp \to KK\Lambda\Lambda$ production reaction, relevant for $\Lambda\Lambda$ femtoscopy studies.

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