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Correlation Functions for Coupled $K\Lambda$ Interaction and $N(1535)$ Resonance

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The $K\Lambda$ interactions in coupled channels are investigated around the energy region of $N(1535)$ resonance through femtoscopic correlation functions within the Koonin-Pratt formalism, by means of which the $N(1535)$ resonance can be dynamically generated in the chiral unitary approach. Two-body scattering amplitudes are calculated using the chiral unitary approach, and the corresponding wave functions and correlation functions are obtained. The analysis shows that the πN channel becomes important to the $K\Lambda$ correlation function through coupled channel effects, even if its mass threshold is far from the energy region of the $N(1535)$ resonance. It is worthy to mention that, with the picture that the $N(1535)$ is a dynamically generated state, one can get a good reproduction of the experimental data on the $K\Lambda$ correlation function.

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