

ROCKSTAR: Towards a Roadmap of the Crucial measurements of Key observables in Strangeness reactions for neutron sTARs equation of state

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Antikaon absorption in nuclear medium and kaonic atoms

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We have developed a microscopic model for the K^-NN absorption in nuclear matter [1]. The absorption was described as a meson-exchange process and the primary K^-N interaction strength was derived from the state-of-the-art chiral models. The medium modifications of the K^-N scattering amplitudes due to the Pauli principle were taken into account. The model was applied in calculations of kaonic atoms for the first time [2]. The description of the data significantly improved when the two nucleon absorption was considered. The branching ratios for various K^- absorption channels in $^{12}\text{C}+K^-$ atom were calculated and compared with old bubble chamber data, as well as with the latest data from the AMADEUS collaboration [3]. Next, we considered the hadron (Y, K^-, π) selfenergies in the K^-N scattering amplitudes as well as in the K^-NN absorption model. Their effect on the total K^- potential in nuclear matter is currently being explored.

References:

- [1] J. Hrtankova, A. Ramos, Phys. Rev. C 101 (2020) 035204.
- [2] J. Obertova, E. Friedman, J. Mares, Phys. Rev. C 106 (2022) 065201.
- [3] R. Del. Grande et al., Eur. Phys. J. C 79 (2019) 190.

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