No-Core Shell Model for Nuclear Systems with Strangeness

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In the present contribution we report on a novel *ab initio* approach for nuclear few- and many-body systems with strangeness. Recently, we developed a relevant no-core shell model technique [1] which we successfully applied in first calculations of nuclear systems with non-zero strangeness. The use of translationally invariant finite harmonic oscillator basis allows us to employ large model spaces, compared to traditional shell model calculations, and use realistic NN and NY interactions (such as those derived from EFT [2]). We discuss in detail formal aspects of the methodology, show first demonstrative results for hypertriton and ${}^{4}_{\Lambda}$He, and give outlook.

[1] P. Navrátil, S. Quaglioni, I. Stetcu, and B. R. Barrett, J. Phys. G 36 (2009) 083101.

[2] H. Polinder, J. Haidenbauer, U.-G. Meißner, Nucl. Phys. A 779 (2006) 244.

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