

Internship in theoretical nuclear physics

Effective nucleon-nucleon interaction in open quantum system formalism of the Gamow Shell Model

Generic properties of the effective nucleon-nucleon (NN) interaction is well studied in the closed quantum system framework of standard Shell Model. How an effective NN interaction evolves when going from the valley of β -stability towards proton or neutron drip lines or in the continuum above particle emission threshold(s), is less understood.

It is proposed to study the change of effective NN interaction in single-particle shells of different j -quantum numbers using an open quantum system many-body framework of the Gamow Shell Model. Results will be calculated and analysed for different binding energies of single-particle shells j_1, j_2 , different spin, isospin and parity J, T, π of two-particle wavefunction, and different components of the NN interaction.

Expected skills

Good skills in numerical methods and applications

This work can be pursued by a PhD-thesis

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