TALENT Course 6: Theory for exploring nuclear reaction experiments

Outline project proposal

Project name: Transfer reaction and single particle excitation of 11Be.

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Project outline and aims:

The analysis was done of the system 18O (9Be, 11Be) 16O for inelastic excitations and transfer 2n. The channels were the most relevant 2n transfer and inelastic excitations. The transfer calculations were made using Coupled Reaction Channel Method for direct transfer. In the calculations were not used any free parameter, because of the potential interaction we used the parameter-free Double folding São Paulo potential, and to account for the excitation of the continuum was made using the recently developed theory of 0.6 [1].

Besides the cluster model for the direct transfer of 2n model was used to model the independents coordinates. In this model the overlaps between different initial and final states of the interacting nuclei is used to single particle model. However, for calculating the excitations of the elements and inelastic transition matrix models are used collective simple derived using the elastic potential as the potential of the channel transition. In this project we intend to fix it, using microscopic potential transition stemming from the superposition of single particle states.

Key references:

[1] D. Pereira et al. Phys. Lett. B 710 (2012) 426.