乞掲示

理化学研究所原子核グループコロキウム　*2005. 4. 14*

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題目：　Can Spectroscopic Information Be Extracted From Transfer Reactions?

∗ The seminar will be given in *English.*

日時：　2005 年　4 月　14 日 (Thu.)　14:00 –

場所：　RIKEN Main Bldg. 1F Seminar Room

Abstract

Spectroscopic factors play an important role in nuclear physics and astrophysics. The traditional method of extracting of the spectroscopic factors (SFs) from direct transfer reactions suffers from serious ambiguities. For conventional nuclei there are many experiments available providing SFs. However, for exotic nuclei near or on the driplines, transfer reactions are a unique tool and, hence, can have a significant impact on the programs of the new generation rare isotope laboratories. In this talk I will address a novel method of extracting the SF from transfer reactions. This method is based on including information about the asymptotic normalization coefficients (ANCs) of the overlap functions into the transfer reaction analysis. Inclusion into the DWBA the information about the ANC fixes the contribution of the external part of the reaction amplitude which typically dominates. Hence in a new approach the SF is determined from fitting the internal part what perfectly reflects the physics of the SFs. I illustrate the modified method with reactions on and targets at different energies. The modified method has the potential of improving the reliability and accuracy of the structure information. It is especially important for nuclei on dripline, where data is scare. The discussed method will become useful for a broad variety of transfer experiments in the field of rare isotopes like RIKEN. The same method can equally be used for transfer to excited states. These same ideas can be extended to other reactions, in particular breakup reactions which also have an impact on Astrophysics. Finally, it would be helpful if the state-of-the-art reaction codes would incorporate the formalism discussed.

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