Reaction mechanism of two-neutron transfer in DWBA

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Abstract

We present a brief introduction to the second order DWBA reaction formalism which we have used to perform the theoretical analysis of two–nucleon transfer reactions induced both by heavy and light ions. We also show an example of such a calculation, emphasizing the connection between the structure aspects of the problem and the resulting predicted two–neutron transfer cross section. The calculations were carried out making use of software specifically developed for this purpose. It includes sequential, simultaneous and non–orthogonality contributions to the process. Microscopic form factors are used which take into account the relevant structure aspects of the process, such as the nature of the single–particle wavefunctions, the spectroscopic factors, and the interaction potential responsible for the transfer. Overall agreement with the experimental absolute values of the differential cross section is obtained without any free parameter.

Table of Contents

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Two--neutron transfer reac$on and Cooper pair condensate/ pair density. 3. Ngs → (N--2)gs or (N--2)*. Spa$al correla$on among two--neutrons. This mode is favored by transfer of a di--neutron. DWBA Transfer cross sec$on: Ground-- to--Ground. A. gs. We present a brief introduction to the second order DWBA reaction formalism which we have used to perform the theoretical analysis of two–nucleon transfer reactions induced both by heavy and light ions. We also show an example of such a calculation, emphasizing the connection between the structure aspects of the problem and the resulting predicted two–neutron transfer cross section. The calculations were carried out making use of software specifically developed for this purpose. It includes sequential, simultaneous and non–orthogonality contributions to the process. Microscopic form factors are