Structure aspects of direct and sequential two-nucleon transfer reactions

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We investigate two-nucleon transfer reactions over a wide range of nuclei from ^{12}C to ^{208}Pb including (p,t), (t,p), (p,^{3}He) and (^{3}He,p) using the reaction code Fresco [1]. In all cases both direct and sequential transfer are included. The study is facilitated by a new wrapper code FR2IN which translates the microscopic matrix elements for two-nucleon overlaps obtained from shell-model codes such as Oxbash and NuShellX [2] into the appropriate format for direct and sequential transfers in Fresco. Overall agreement with data is reasonable given the uncertainties related to optical potentials. In most cases the sequential transfer is important. The use of these reactions for understanding aspects of nuclear structure such as T=1 paring and T=0 pairing in stable and exotic nuclei will be discussed.

References

[1] I.J. Thompson, Comp. Phys. Rep. 7, 167 (1988); http://www.fresco.org.uk/

[2] www.nscl.msu.edu/∼ brown/resources/resources.html