Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Coupling effects in the extraction of spectroscopic factors FILOMENA NUNES, National Superconducting Cyclotron Laboratory, PIERRE CAPEL, Universite de Bruxelles, PAWEL DANIELEWICZ, National Superconducting Cyclotron Laboratory — Often one-nucleon spectroscopic factors for loosely-bound nuclei are extracted from peripheral reaction data. This is done under the assumption that, aside from the normalization, the one- nucleon overlap function for the reaction can be approximated in terms of a pure single-particle orbital. The latter can be expected to be valid when the spectroscopic approaches 1, but not necessarily otherwise. To test the validity of the single- particle assumption, we study the core+n system with coupling to excitation of the core. Interactions are fitted to reproduce a realistic nucleus (11Be). We also study an extreme-coupling toy-model, with only two states coupled through a surface delta force. Our results generally render support for the single- particle approximation in the extraction of the spectroscopic factor, even for small values of the factor. When the small values of the spectroscopic factor are combined, though, with a strong localization of the coupling, as in our toy model, deviations from the single particle form can become important.

Filomena Nunes
National Superconducting Cyclotron Laboratory

Date submitted: 14 May 2009 Electronic form version 1.4