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Test of Nuclear Wavefunctions for Neutrinoless Double Beta Decay J.P. SCHIFFER, ANL, S.J. FREEMAN, Manchester, K.E. REHM, ANL, A.C.C. VILLARI, ANL and GANIL — The possibility of observing neutrinoless double beta decay (0ndbd) is of great current interest. If this process is observed, the major uncertainty will come from the nuclear matrix elements. For the case of  $^{76}Ge$ , theoretical predictions vary by over an order of magnitude. We propose the study of nuclear reactions to quantitatively test the relevant wave functions, which may help narrow the range of reasonable predictions. Since the 0ndbd process involves two correlated neutrons changing into two correlated protons with no intermediate state, it has some relationship to the well-known BCS pairing correlations in nuclear ground states. The latter are best probed by two-nucleon transfer reactions: e.g.  $^{76}Ge(p,t)^{74}Ge$  and  $^{74}Ge(^{3}He,n)^{76}Se$ . In addition, the occupancy and the changes in occupancy of the valence orbits can be probed using careful measurements of one-nucleon transfer cross sections and sum rules. This work was supported in part by the U.S. Department of Energy, Office of Nuclear Physics, under Contract No. W-31-109-ENG-38.

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