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Coupled Channel Calculations for Nucleon Induced Reactions¹ GUSTAVO NOBRE, IAN THOMPSON, JUTTA ESCHER, FRANK DIETRICH, Lawrence Livermore National Laboratory, MARC DUPUIS, Los Alamos National Laboratory — An *ab-initio* calculation of the optical potential for neutron-nucleus scattering has been performed by explicitly coupling the elastic channel to all the particle-hole (p-h) excitation states in the target. These p-h states may be regarded as *doorway states* through which the flux flows to more complicated configurations, and (in the end) to long-lived compound nucleus resonances. The random-phase approximation (RPA) provides the linear combinations of p-h states that include the residual interactions within the target, and we show preliminary results for elastic flux loss and total cross-section using both p-h and RPA descriptions of ⁹⁰Zr and ²⁰⁸Pb target excitations for a wide projectile energy region. Within this procedure we were able to observe coupling and structure effects of the studied nuclei by comparing the different coupled channel calculations results with experimental data, and will soon be applied to other targets.

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