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Continuum response functions from the R-matrix and Lorentz Integral Transform method W. ERICH ORMAND, MICHAEL KRUSE, Lawrence Livermore National Laboratory, CALVIN JOHNSON, San Diego State University — Strength functions are an excellent tool to determine the collective excitation mechanism of a nucleus. In previous work we analyzed the giant dipole resonance of Boron-10 as calculated through Lanzcos strength function techniques and the No Core Shell Model (NCSM); a many-body bound state technique which uses as input realistic two- and possibly higher body forces. Since we only calculate bound states we need to introduce a posteriori a finite width for the transition matrix elements in the strength function. We present here two ways of including continuum physics into the discrete strength function: the R-matrix formulation of neutron escape widths and the Lorentz Integral Transform (LIT) method. To calculate the GDR of Boron-10 we implemented an R-matrix formulation of neutron escape widths; our calculations agree with experimental cross section data, and are different from those obtained with the LIT. We discuss both the R-matrix and LIT method, paying special attention to the physics contained in each method, and for the LIT provide an uncertainty estimate based on a chi-square analysis of the reconstructed response function.

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