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Ab-initio strength functions in light nuclei MICHAEL KRUSE, W. ERICH ORMAND, 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 the presence of electromagnetic fields. Since the discovery of the giant-dipole resonance in heavy nuclei much theoretical and experimental work has been devoted to studying strength functions. We present strength function calculations for the light nuclei A=6, A=10 and C-12 within an ab initio framework. We show results for the isoscalar and isovector monopole modes as well as the electric- and magnetic dipole response. The calculations are performed with the No-Core Shell Model. As input we use an isoscalar Hamiltonian derived from a similarity renormalized two-body chiral N3LO interaction and perform the calculation for basis-space sizes up to Nmax=14 for A=6 and Nmax=8 for A=10. Further, we present evidence supporting the Brink hypothesis that if a giant dipole resonance is found for the ground-state then the excited states will also exhibit such a resonance.

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