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Amplitudes and overlaps in ab initio calculations of light nuclei KENNETH NOLLETT, San Diego State University — Some clustering properties of nuclei are usefully interpreted in terms of overlap functions. These functions are projections of an A-body nucleus onto an $(A-1)$-body core and an additional nucleon, or an $(A-4)$-body core and an additional alpha particle, at varying separation. Long-range limits of overlaps are given by asymptotic normalization constants (ANCs), which suffice to model some reaction processes; their shorter-range parts are also needed to interpret some types of experiments. Naively, one computes overlaps from wave functions using their definition. However, there is an integral relation that allows more accurate calculations from approximate wave functions, using exact terms from the nucleon-nucleon potential. I will describe calculations by this method of overlap functions and ANCs for both nucleon and alpha emission from *ab initio* variational Monte Carlo wave functions. I will also describe the use of overlaps to probe small components of wave functions like those arising from hadronic parity violation.

Kenneth Nollett
San Diego State University

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