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**A consistent Analysis of (e,e'p) Reactions through the Nonlocal Dispersive Optical Model**[1] MACK ATKINSON, MOHAMMADHOSSEIN MAHZOON, Washington Univ, WILLEM DICKHOFF, Advisor, ROBERT CHARITY, Washington Univ — A nonlocal dispersive optical model (DOM) analysis of the $^{40}$Ca(e,e'p)$^{39}$K reaction has been implemented. The real and imaginary potentials are constrained by fitting to elastic-scattering data, total and reaction cross sections, energy level information, and the charge density of $^{40}$Ca. The nonlocality of these potentials permits a proper dispersive self-energy, which accurately describes both positive and negative energy observables. Previous $^{40}$Ca(e,e'p)$^{39}$K calculations, using local non-dispersive potentials employed in a distorted-wave impulse approximation (DWIA), provided the accepted values of 0.65 and 0.5 for the spectroscopic factors of the $0d\frac{3}{2}$ and $1s\frac{1}{2}$ orbitals, respectively. These orbitals have well defined spectroscopic factors which can be calculated directly from the DOM self-energy, corresponding to 0.76 and 0.74, respectively. The $^{40}$Ca(e,e'p)$^{39}$K cross sections calculated using the DOM self-energy is in good agreement with the experimental cross sections. These results suggest that a proper description of the (e,e'p) reaction is indeed obtained through the DWIA only by using non-local dispersive optical potentials that simultaneously describe the overlap function and outgoing wavefunction of the proton.

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