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Excitation of the  $2p^53p$  states of neon by incident electrons AL-BERT CROWE, GARY LEIGHTON, University of Newcastle, UK — A polarized photon-scattered electron correlation study of excitation of the individual  $2p^53p$ states of neon and their decay to the  $2p^53s$  states provides valuable information on a range of physical effects influencing the alignment and orientation of the excited states. These include exitation of a well LS-coupled state through electron exchange and the excitation of states with different J values, but where L and S are not good quantum numbers. Here we concentrate on excitation of the  $3p[5/2]_3$  state with the emission of a 640.2 nm photon in decay to the  $3s[3/2]_2$  state. All four differential Stokes parameters necessary to describe this pure  ${}^3D_3$  excited state will be presented for an incident electron energy of 50 eV and for scattering angles up to  $120^\circ$ . The data will also be shown in terms of parameters describing the excited state charge cloud and compared with available theory and a previous experiment over a more limited angular scattering range.

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