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Meson photoproduction from the nucleon at CLAS

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An extensive measurement programme of meson photoproduction from the nucleon has been obtained exploiting the CLAS detector in Hall-B of Jefferson Lab. The main aim of the programme is to provide high quality experimental data to constrain partial-wave analyses and reaction models used to determine the spectrum and properties of nucleon resonances. Obtaining accurate and detailed information on this spectrum would provide valuable insights regarding the dynamics and interactions of the nucleon's constituents. Theoretical predictions of the resonance spectrum can be obtained from a range of approaches including constituent quark models and more recently from Lattice QCD. Despite these exciting advances in theory the properties and even existence of many nucleon resonances are poorly established experimentally.

The programme of measurements at CLAS will provide new, quality data on single and multiple meson photoproduction from the nucleon to better constrain the extraction of the spectrum. The experiments utilised linearly and circularly polarised photon beams on longitudinally and transversely polarised nucleon targets. The centre-of-mass energy, W , of the data set is 1.2 - 2.25 GeV, covering a large fraction of the resonance region. The FROzen Spin Target (FROST) and polarised H-D target used in the experiments will be discussed. Preliminary results for a range of single- and double- polarisation observables in meson photoproduction will also be presented.

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Session Classification: Light Meson Spectroscopy