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The Importance of Polarization Observables in Extracting Baryon Resonances: The NSTAR Program at Jefferson Lab using Polarized Photon Beams and Polarized Targets[1]

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I shall report on the NSTAR program in Hall B of Jefferson Lab on using polarization observables as an incisive tool for extracting baryon resonances. The scientific purpose of this program is to improve the understanding of the underlying symmetry of the quark degrees of freedom in the nucleon, the nature of the parity exchange between the incident photon and the target nucleon, and the mechanism of associated strangeness production in electromagnetic reactions. With the high-quality beam of the tagged and collimated of circularly- and linearly- polarized photons onto unpolarized and polarized proton and deuterium targets, and coupled with the nearly complete angular coverage of the Hall-B spectrometer, we will extract the differential cross sections and polarization observables for the photoproduction of vector mesons and kaons at photon energies ranging between 1.1 and 2.1 GeV.

[1]NSF Award 0555497