

Abstract Submitted  
for the DNP19 Meeting of  
The American Physical Society

**Excited Nucleon Spectrum and Structure Studies with CLAS12<sup>1</sup>**

DANIEL CARMAN, Jefferson Lab, CLAS COLLABORATION COLLABORATION — The  $N^*$  program in Hall B at Jefferson Laboratory studies the spectrum and structure of excited nucleon states employing exclusive electroproduction reactions. This effort is an important avenue to explore strongly interacting systems of QCD. The CLAS detector has provided the dominant part of the available world data on  $\pi N$ ,  $\eta N$ ,  $\pi\pi N$ , and  $K^+Y$  electroproduction in the nucleon resonance region for  $Q^2$  up to 5 GeV<sup>2</sup>. These data have yielded the only results available on the  $Q^2$  evolution of the electrocoupling amplitudes for most  $N^*$  states up to  $W=1.8$  GeV to explore their internal structure. Starting in early 2018, the  $N^*$  program using the new CLAS12 spectrometer began. These studies will probe  $N^*$  states in the mass range up to  $W$  of 3 GeV and  $Q^2$  from 0.1 GeV<sup>2</sup> to 12 GeV<sup>2</sup>, thus providing a means to access  $N^*$  structure information spanning a broad range of distance scales. Quasi-real photoproduction studies are also planned to search for additional hybrid baryon states, for which the glue serves as an active structural component. In this talk the results of the ongoing analysis of the data collected from CLAS12 associated with the  $N^*$  program will be reviewed to highlight the current status and future plans.

<sup>1</sup>U.S. Department of Energy contract DE-AC05-06OR23177

Daniel Carman  
Jefferson Lab

Date submitted: 01 Jul 2019

Electronic form version 1.4