Analysis of Lambda-Proton Elastic Scattering in CLAS[1] NO-
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Dominguez Hills, CLAS COLLABORATION — Lambda-Proton elastic scattering
offers multiple insights on problems in nuclear physics. SU(3)-flavor symmetry im-
plies a close agreement between the Lambda-proton and proton-proton scattering
cross sections. The Lambda-Proton elastic scattering cross section can also illumi-
nate the structure of neutron stars. A data-mining project was started using CLAS
data taken to look for exotic quark matter with a high-energy photon beam on a long
liquid hydrogen target. A Lambda produced in a process such as gamma p–¿K+
Lambda can interact with a second proton inside the target before either decaying
or leaving the target. The good angular acceptance and momentum resolution of
CLAS make it well-suited for this type of analysis, even though it was not designed
for a measurement such as this. The scattered Lambda can be found in the pi-
proton invariant mass. The four-vector of the initial Lambda is then reconstructed
in the process Xp–¿Lambda p, which shows a strong peak at the Lambda mass
with roughly twice the number of events as the existing world data sample. This
observation opens up the possibility of other measurements using secondary beams
of short-lived particles. This talk will discuss the current status of the analysis, and
our plans for future work on this project.

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