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Elastic Lambda-proton Scattering in CLAS[1] AMAURI TAPIA, JOHN PRICE, California State University - Dominguez Hills, CLAS COLLABORATION — Λp elastic scattering can lead to a greater understanding of the strong nuclear force. Obtaining a beam of Λs is difficult, however, because they do not exist in nature, and because they decay rapidly. The CLAS Detector at the Thomas Jefferson National Accelerator Facility in Newport News, VA creates many Λs using the process $\gamma p \rightarrow K^+\Lambda$. The produced Λ can then lead to the elastic scattering process $\Lambda p \rightarrow \Lambda p$ using a second proton in the target. A data-mining project was undertaken by the CSUDH Hadronic Structure Laboratory using data from the CLAS g12 dataset, in which a tagged photon beam with E_γ from 3.6 to 5.4 GeV was incident on a liquid hydrogen target. The final state of the process $\gamma p \rightarrow K^+\Lambda$; $\Lambda p \rightarrow \Lambda p$; $\Lambda \rightarrow \pi^- p$ is $K^+\pi^- pp$, an apparent violation of baryon number conservation which provides a very stringent cut, reducing the data sample considerably. In the remaining data, we have observed a number of $\Lambda p \rightarrow \Lambda p$ events that is roughly twice the world's data sample. The upgraded CLAS12 detector and improvements to target design may allow better detection rates and will allow the study of more complicated processes beyond simple elastic scattering. This talk will present the motivation for this work, the current status of the project, and future work.

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