

## The KLong Facility in Hall D at Jefferson Lab

*Friday 5 April 2024 13:30 (30 minutes)*

The KLong Experiment in Jefferson Lab Hall D will use a secondary beam of neutral kaons and the GlueX experimental setup to perform strange hadron spectroscopy. By achieving a flux on the order of  $1 \times 10^4$   $K_L$  /sec, KLF will allow a broad range of measurements that improve the statistics of previous world data by several orders of magnitude.

The experiment will measure both differential cross sections and self-analysed polarisations of the produced  $\Lambda$ ,  $\Sigma$ ,  $\Xi$  and  $\Omega$  hyperons spanning the mass range  $W = 1490$  MeV to 2500 MeV. KLF data will significantly constrain partial wave analyses and reduce model-dependent uncertainties in the extraction of the properties and pole positions of the strange hyperon resonances, as well as establish the orbitally excited multiplets in the spectra of the  $\Xi$  and  $\Omega$  hyperons. The proposed facility will also have a defining impact in the strange meson sector through measurements of the final state  $K\pi$  system up to 2 GeV invariant mass, allowing the determination of pole positions and widths of many resonances.

This talk will give an overview of the KLong Facility design, current status, and prospects for its impact in strangeness spectroscopy.

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