

## Abstract Title

Daniel Watts<sup>1\*</sup>

<sup>1</sup>*University of York*

### Content

The Very Strange experiment at Jefferson Lab is dedicated to advancing our understanding of the photoproduction mechanisms of doubly and triply strange baryons, with a particular focus on the  $\Xi$  (cascade) states. Using the CLAS12 detector, the project investigates quasi-real photoproduction processes to explore the rich spectrum of excited hyperons predicted by quark models. Current models anticipate 44 cascade states below 2.5 GeV, yet only six  $\Xi$  states currently have three-star or higher ratings in the Particle Data Group, while their production dynamics remain largely unexplored. The experiment aims to bridge this gap by extracting quantum numbers of newly observed and previously missing  $\Xi$  states, thereby contributing to a more complete picture of hyperon spectroscopy. For the first time, the measurement of beam polarisation transfer and induced polarisation of the  $\Xi^-$  baryon becomes possible. The experiment will also provide quality data on hyperon-nucleon interactions. This talk to provide an overview of the Very strange experiment and the current status of the analysis.

**Field of Research:** Production, structure and decay of hypernuclei / Multi-strange systems

**Experiment / Theory:** Experiment

**Contribution Type:** Invited talk