Contribution ID: **35** Type: **Contributed Oral**

Investigation of the Eta1 exotic meson at GlueX

Saturday, 14 February 2026 08:45 (15 minutes)

Hadronic physics aims to understand the contribution and dynamics of quarks and gluons in the formation of hadrons. Quantum Chromodynamics predicts a number of states, including those having gluonic degrees of freedom called hybrids, but only a few have been established experimentally. The GlueX experiment at Jefferson Lab, USA, utilizes a linearly polarized photon beam of 8-9 GeV and a large solid angle particle detector system for hadron spectroscopy. Among the physics goals are the study of the hybrid meson spectrum and the search for mesons with exotic quantum numbers.

Recently, the signature of a predicted exotic isoscalar, η_1 has been reported by the BESIII collaboration in the radiative decay of $J/\psi \to \eta_1\gamma \to \eta\eta'\gamma$. The production of a two pseudoscalar system, $\eta\eta'$ is also allowed in the photon-induced interaction $\gamma p \to \eta\eta' p$, and can be reconstructed with the GlueX spectrometer, giving us an excellent opportunity to search for the signature of the η_1. An initial analysis of this two meson system, based on GlueX Phase-I data set (2017-2018), did not provide a conclusive result because of limited statistics. An increase in statistics, by a factor of 2-3 is expected from the GlueX Phase-II data set, that is currently being recorded. This should allow us to perform a precise study and yield better results. Preliminary Monte Carlo simulation studies for this channel will be presented and discussed.

Your current academic level

PhD student

Your email address

hst401@uregina.ca

Affiliation

University of Regina

Supervisor email

Zisis.Papandreou@uregina.ca

Supervisor name

Dr. Zisis Papandreou

Primary author: SINGH, Harsimran (University of Regina)

Presenter: SINGH, Harsimran (University of Regina)

Session Classification: QCD

Track Classification: QCD and Hadrons