HALL D
INTERVIEW SEMINAR

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"Investigation of the lightest hybrid meson candidate"

The strong interaction between quarks and gluons, from which hadrons are built, is theoretically described by quantum chromodynamics. In particular, however, the role of gluons and how they affect the properties of hadrons is still unresolved. The discovery of several unexpected and possibly exotic hadrons in recent years highlights the need for precise spectroscopic measurements to understand the nature of the strong interaction. This talk will focus on the lightest candidate for a hybrid meson, a state with explicit gluonic degrees of freedom. The status of the search for exotic contributions in photoproduction data from the GlueX experiment in $\pi\eta$ systems will be presented. Specifically, results on the production of the $a2(1320)$ meson in these key channels, which are first steps in the search for exotic hybrids, will be discussed. The application of a partial wave analysis exploiting the polarization of the photon beam available to the GlueX experiment, and implications for the measures needed to identify the hybrid will be discussed. These investigations build upon knowledge from a coupled-channel partial wave analysis of antiproton-proton data recorded by the Crystal Barrel experiment. This analysis resulted in the observation of a significant spin-exotic contribution in the $\pi 0\eta$ system of the $pp\to\pi 0\pi 0\eta$ reaction. Based on the result of this analysis, an extension to include also intensities and phase differences for the $\pi\eta$ and $\pi\eta'$ channels measured by COMPASS will be shown.

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VIA ZOOM

https://jlab-org.zoomgov.com/j/1619817670?pwd=RlpTaml5ZVMxTjI0aUU0cEo4SWYxdz09&from=addon