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Light Exotic Mesons in the GlueX Experiment

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The primary goal of the GlueX program is to explore the spectrum of light-quark mesons for excitations with explicit gluonic degrees of freedom, as predicted by Quantum Chromodynamics. These particles are termed hybrid mesons and some are predicted to possess exotic JPC quantum numbers. Lattice QCD predicts patterns of hybrid states with masses in the 2-GeV/cˆ2 range, which can be accessed in photo-production through simple t-channel exchanges. GlueX's unique production mechanism in photon-proton collisions may be effective in this search. The experiment incorporates a high-intensity, linearly-polarized, tagged, real-photon beam and a multipurpose large-acceptance spectrometer with charged and neutral particle detection capability. The first phase of running has finished with a luminosity of over 300 pbˆ-1 above 8.1 GeV. The key features and selected results of this compelling physics program will be presented.

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