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Hadron spectroscopy with CLAS/CLAS12 at Jefferson Lab

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The spectrum of hadrons consists of bound states of quarks and gluons. The distinctive feature of strong interactions, described by Quantum Chromodynamics (QCD), is confinement, which prevents quarks and gluons from appearing as free particles. A new generation of dedicated experiments in hadron physics is underway with the goal of uncovering the properties of strong interactions and, in particular, the mechanisms underlying confinement. Several of these experiments are already in operation, and more are planned in the near future at world-leading laboratories.

In this contribution, I will present the hadron spectroscopy program at Jefferson Lab with the CLAS and CLAS12 detectors. Highlights of the physics program will be discussed, along with progress in developing advanced AI-supported tools for data analysis and interpretation. Highlights of the physics program as well progress in developing sophisticated AI-supported data analysis interpretation tools will also be presented.

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