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Overview of the proposed Solenoidal Large Intensity Device (SoLID) and its physics programs at Jefferson Lab[1]

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The proposed Solenoidal Large Intensity Device (SoLID) at Jefferson Lab is a large acceptance forward scattering spectrometer with full azimuthal angular coverage capable of handling high luminosities (10^{37} $10^{39}/\mathrm{cm}^2/\mathrm{s}$) with a variety of polarized and unpolarized targets. Highly impactful experiments utilizing this device have been approved by the Jefferson Lab program advisory committee. These include the tomography of the nucleon in three-dimensional momentum space through semi-inclusive deep-inelastic scattering measurements and precise determination of tensor charges providing benchmark tests of lattice QCD calculations; pushing the frontiers in the search of new physics andof hadronic physics using parity-violating deep inelastic scattering; and precise measurement of differential electro- and photo- production cross section of J/Ψ near threshold to access the QCD trace anomaly, probe the strength of the color van der Waals force, and search for possible LHCb charm pentaquarks. In this talk, I will provide an overview of the proposed SoLID device, and focus on the approved physics programs. I will conclude by mentioning additional experiments which can run parasitically with the approved experiments.

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