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The JLab Physics Program Today and with the 12 GeV Upgrade

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JLab is bringing about a new and deeper understanding of nuclear matter, and with the 12 GeV upgrade, qualitatively new possibilities will open. JLab has accomplished many of its original goals, including exploring the transition between the nucleon/ meson and quark/gluon regimes and a substantially improved understanding of the strong force. There have also been important discoveries. Precision studies of elastic scattering have shown an unanticipated Q^2 dependence of the ratio G_E^p/G_M^p, a result that has underscored the importance of quark orbital angular momentum (OAM). The role of OAM appears to be critical for understanding other results as well, including data from both inclusive and semi-inclusive deep inelastic scattering (DIS). An important theoretical achievement has been the development of generalized parton distributions (GPDs), which among other things, make it possible to understand both elastic and inelastic processes under a single theoretical framework. GPD's are already being probed at JLab, and after the upgrade, it will become possible to do what is essentially tomography of the nucleon. Another important probe in electron scattering is the study of parity violating spin asymmetries. Experiments have already used parity violation (PV) to probe the role of strange quarks in the nucleon, and both precision electroweak tests as well as studies of the properties of neutron matter are planned. At 12 GeV, the study of PV in DIS will provide new information on both hadronic and electroweak physics. Finally, of great importance at 12 GeV will be the GlueX experiment that will search for new exotic hybrid mesons. Predicted to exist because of excitations of gluonic flux tubes, the discovery of these mesons might well provide the most definitive probe to date of the glue that makes up a large fraction of the nucleons mass.