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Study of the Perfect Liquid at RHIC

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The Relativistic Heavy Ion Collider (RHIC) has been providing high energy collisions of nuclei (from protons to gold) since 2000, with the goal of studying strongly interacting matter at the highest densities and temperatures achieved in the laboratory. Ten years of RHIC data have revealed the system formed in these collisions are a “perfect fluid,” one with very low viscosity – perhaps even saturating the viscosity bound predicted from string theory. This system has been labeled the “strongly-coupled Quark-Gluon Plasma,” or sQGP, to distinguish it from the weakly-coupled system expected at high energies expected previously as a consequence of asymptotic freedom. This talk will outline the experimental program at RHIC, and highlight several of the most important results leading to the current understanding of RHIC data. It will also explain how both the RHIC upgrades and the upcoming Pb+Pb program at the CERN LHC will contribute to our understanding of the microscopic processes that lead to the formation and evolution of this novel strongly-coupled medium.