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sPHENIX Jet Upgrade Program: Unraveling Strong versus Weak Coupling

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The PHENIX Experiment is proposing an exciting suite of upgrades called sPHENIX, with a first stage including a world class jet detector with full electromagnetic and hadronic calorimetry capable of sampling up to 50 billion Au+Au collisions annually and measuring jets over a broad kinematic range and with high statistics (over 10 million jets above 20 GeV and over 100,000 jets above 40 GeV). The motivation for extending the jet program of the LHC to temperatures in the range of the transition temperature and varying the scale for probing the medium relates directly to the question of how strong coupling works near the transition temperature and how rapid the approach to weak coupling might be. In this presentation, we detail the various theoretical calculations and how a comprehensive world program (at both RHIC and the LHC) of jet and high energy hadron and photon measurements will be key to unravel this puzzle.

Primary author: Prof. NAGLE, Jamie (University of Colorado)

Presenter: Prof. NAGLE, Jamie (University of Colorado)

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