

Department of Physics Colloquium

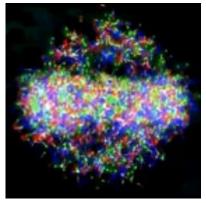
Friday, May 7, 2010 • 4:00 P.M. • 2241 Chamberlin Hall cookies & coffee served at 3:30 p.m

Once and Future Science at RHIC



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The Relativistic Heavy Ion Collider has pioneered laboratory study of condensed matter systems governed by a force of a different color. An overarching theme of RHIC research is to unveil unique quantum many-body manifestations of the underlying color force, and their possible implications for the early universe and for other systems based on non-Abelian particle interactions. I will review the status - techniques, results, interpretations, implications and plans - associated with three particular lines of inquiry: the discovery of nearly perfect liquid flow of the extremely hot matter produced fleetingly in RHIC heavy-ion collisions; possible evidence for high-temperature vacuum fluctuations (sphalerons) characterized by local violation of symmetries; and the search for evidence of density saturation for low-momentum gluons in cold nuclear matter. In the process, I will also discuss some aspects of the innovative accelerator physics that drives ongoing and planned upgrades of the RHIC facility.

