Speaker: Michael Lisa, The Ohio State University

Title: “The RHIC Beam Energy Scan: a Condensed Matter approach to QCD”

Abstract: Over the past several years, a major component of the experimental program at the Relativistic Heavy Ion Collider (RHIC) has been a systematic study of heavy ion collisions over a large range of collision energies (√s_{NN} ~ 5-200 GeV/c). The motivation for this large-scale undertaking is to explore the QCD phase structure for a range of system parameters (temperature and chemical potentials) over which nontrivial structures may emerge. These structures include a first-order phase transition at large net-baryon density and a critical point. Truly understanding a theory of matter necessarily implies an understanding of its phase structure and the symmetries behind it. The interesting phase structure of QCD lies in the region of high net-baryon number, where Lattice QCD approaches have serious technical difficulty.

I will discuss the emerging picture we are obtaining from the Beam Energy Scan program. If time allows, I will also compare BES studies to an entirely different system -- laser-induced micro-plasma formation in crystals -- that bears striking similarities to our study of heavy ion collisions.