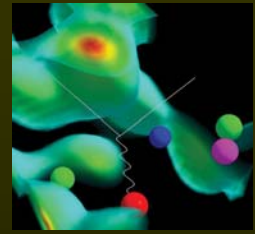


The Physics Department Invites you to a: Seminar



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Frontiers in Nucleon Structure

Quantum chromodynamics offers a powerful and elegant description of one of the fundamental forces in nature. However, we remain at an early stage in being able to describe the everyday nuclear matter of the world around us in terms of the fundamental degrees of freedom in QCD, quarks and gluons. The proton, as a fundamental bound state of QCD, can serve as an excellent laboratory in which to probe the complexities of the strong force as we learn more about the very matter of which we ourselves are made. Colliding polarized proton beams at the Relativistic Heavy Ion Collider (RHIC) offers a novel experimental method for the investigation of nucleon structure, in particular its angular momentum structure. The measurements at RHIC provide unique sensitivity to the spin contribution from the gluon field in the proton and the spin structure of the quark and anti-quark sea, as well as the transverse spin structure of the proton, which continues to produce a number of startling effects. Highlights of the recent contributions that RHIC has made to the study of proton structure will be presented. Looking beyond RHIC, a new facility, capable of colliding a beam of electrons with a wide range of nuclei as well as polarized protons and light ions, has been proposed: the Electron-Ion Collider (EIC) promises to usher in an era of precision measurements of QCD phenomena in nuclear matter, bringing the field to a new stage. The status and prospects of the EIC will be discussed.

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