

Journal Club

Mei Bai

Forschungszentrum, Juelich

From RHIC to COSY, an adventurous Journey

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory on Long Island, NY is a 3.84km circumference circular collider providing collisions of a variety of ions as well as polarized protons at a number of energies studying the early state of the universe, QCD physics as well as spin physics. The Cooler Synchrotron (COSY) at Forschungszentrum Juelich in Germany, on the other hand, is a 184 m circumference race-track synchrotron equipped with both electron coolers and Stochastic coolers to provide proton or deuteron beams for hadron physics experiments using internal targets between a kinetic energy of about 50 MeV up to about 3 GeV. In addition, COSY can also provide extracted beams at its three external beamlines. The light ion beams can also be polarized including tensor polarized deuteron beams, a unique feature of COSY. Despite the fact that COSY is a much smaller facility, its operation bears similar essential ingredients.

More recently, COSY has become a test facility for the development of FAIR (Facility of Antiproton Ion Research), for both of its detectors, and for the High Energy Storage Ring (HESR), as well as for the investigation of a direct EDM (Electric Dipole Moment) search for charged ions in a storage ring. The operation of this facility faces many challenges such as reaching high precision beam control, high precision machine modeling, robust operation, as well as enabling research from multidisciplinary scientific fields.

This presentation will give you a brief introduction to both facilities, to their achievements, challenges, and goals for the future.

Friday, Dec. 9, 2016

2:30pm

401 Physical Sciences Bldg.

