

Ultra-relativistic spin dynamics in the HERA storage rings at DESY



The Deutsches Elektronen-Synchrotron laboratory (DESY) in Hamburg is a leading centre for the production and use of ultra-relativistic spin-polarized electron and positron beams in high energy particle physics and for the theory of ultra-relativistic spin motion in accelerators. An impression of the topics under study can be found at:

<http://www.desy.de/heraspin/>
http://www-mpy.desy.de/proton_pol/
http://www-mpy.desy.de/proton_pol/desypolpapers.html

General information about DESY and its accelerators can be found at:

<http://www.desy.de/html/home/index.html>
<http://www.desy.de/html/home/fastnavigator.html>
<http://www-mpy.desy.de/desy-acc.html>

Among our immediate interests are:

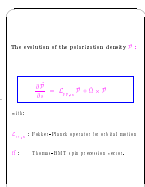
- The depolarizing effects of the beam-beam interaction in the electron/positron (e^\pm) ring at HERA.
- Proton spin dynamics at up to 920 GeV in the HERA proton ring.
- General theoretical and mathematical matters associated with efficient descriptions of deterministic and stochastic spin motion.

We are looking for diploma and doctoral students to join us in this exciting work. Our projects will be mainly of interest to physicists but mathematicians are also strongly invited to contact us.

The person(s) joining us should:

- be prepared to quickly obtain a solid knowledge and understanding of spin polarization in accelerators,
- be prepared to quickly become expert with large scale numerical calculations and in interpretation of the results in terms of physical concepts, and/or contribute to the mathematical aspects of our work,
- be prepared to work cooperatively in a small team.

Our projects provide an opportunity for making a significant contribution to our understanding of spin dynamics at the international level and to the long term performance of HERA; for becoming skilled in large scale numerical computation on modern processors; and for correlating interesting mathematical concepts with the results of numerical calculations.



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