

Impact of the HERA Luminosity Upgrade on the Electron Spin Polarization, M. BERGLUND, Alfvén Laboratory, Stockholm; D.P. BARBER, E. GIANFELICE, DESY - The planned luminosity upgrade of the electron-proton collider HERA is a challenge for both engineers and machine physicists. The redesign of the interaction regions present many problems - one of them is to preserve a high electron spin polarization. In order to reduce the beta-functions at the interaction points (IPs), combined function magnets will have to be introduced inside the detector solenoids of the experimental stations. This unconventional layout will create a complicated field picture in the close vicinity of the IPs and affect the orbits of both beams as well as the spin polarization of the electron beam. Various techniques to model the situation will be described. To achieve good polarization certain conditions on the optics must be fulfilled (so called spin matching conditions) and depolarizing resonances have to be avoided. Methods for modelling the complicated field configurations, for calculating the resulting spin-orbit trajectories and for calculating the polarization are discussed.