

On Increasing the HERA Collider e-p Interaction Region Luminosity, W. BARTEL, R. BRINKMANN, R. KOSE, B. PARKER, F. WILLEKE, DESY and D. PITZL, ETH Zuerich - Since the initial meeting of the "Future Physics at HERA Workshop" in September 1995 a working group has been considering ways to significantly increase the specific luminosity (L_s) at the HERA e-p interaction points (IP) beyond current $L_s = 5 \times 10^{29} \text{ cm}^{-2} \text{ s}^{-1} \text{ mA}^{-2}$. The HERA 30/1 proton/electron magnetic rigidity ratio, complicates simultaneous p/e focusing and presents a significant design challenge. Also since synchrotron photons with energies 100 keV to a few MeV are difficult to shield, being in most material's absorption minimum, the critical energy of photons hitting a detector should be $< 100 \text{ keV}$ at a flux $< 10^8 \text{ photons/s}$. Finally the present, more than 60%, e-polarization will be needed for Electroweak physics. Some options explored are: locating superconducting quadrupoles closer to the IP; putting permanent magnet quadrupoles and/or dipoles, to facilitate beam separation and IP focusing, inside the detector; adding a beam crossing angle and using novel magnetic septum quadrupole magnets. It seems possible to increase L_s more than a factor of 3 without exceeding reasonable tune-shift and chromaticity limits. Some preliminary results are presented in this paper.