

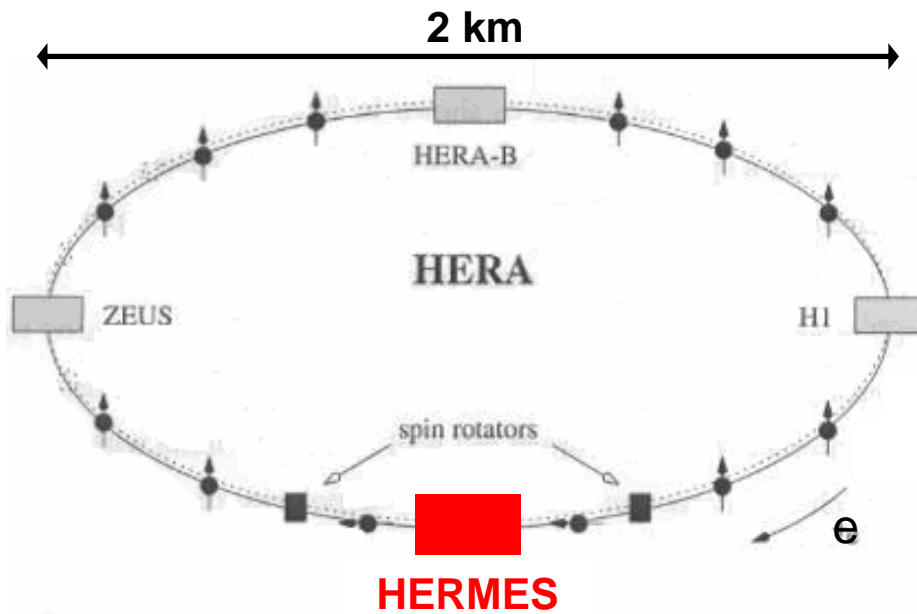
May 28, 2004

**Controlling the polarization of
hydrogen gas target in HERMES experiment**

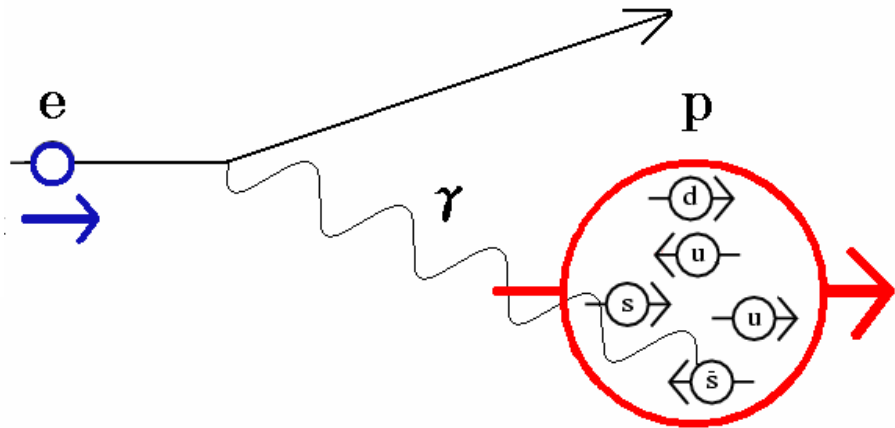
**04M01055 Yoshimitsu Imazu
Shibata lab.**

The HERMES Experiment (HERA MEasurement of Spin)

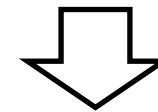
DESY in Hamburg
(Deutsches Elektronen-SYNchrotron)



HERA ring
(the Hardon-Electron Ring Accelerator)

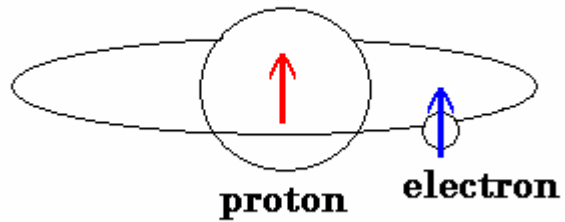


Deep-inelastic scattering,
elastic scattering on quarks

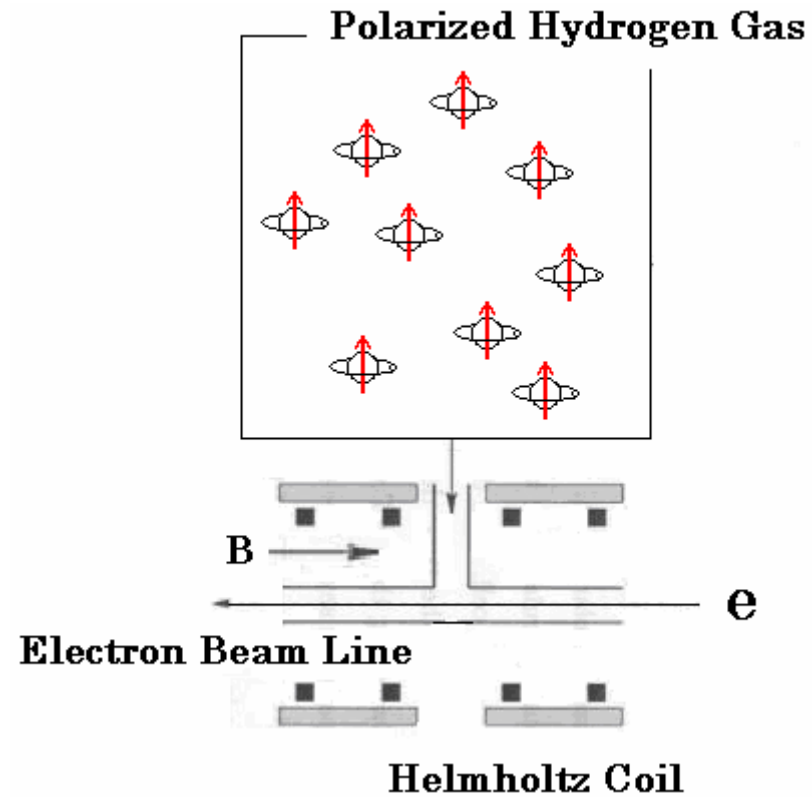


The spin structure of the proton

Polarized Proton Target



Hydrogen atom

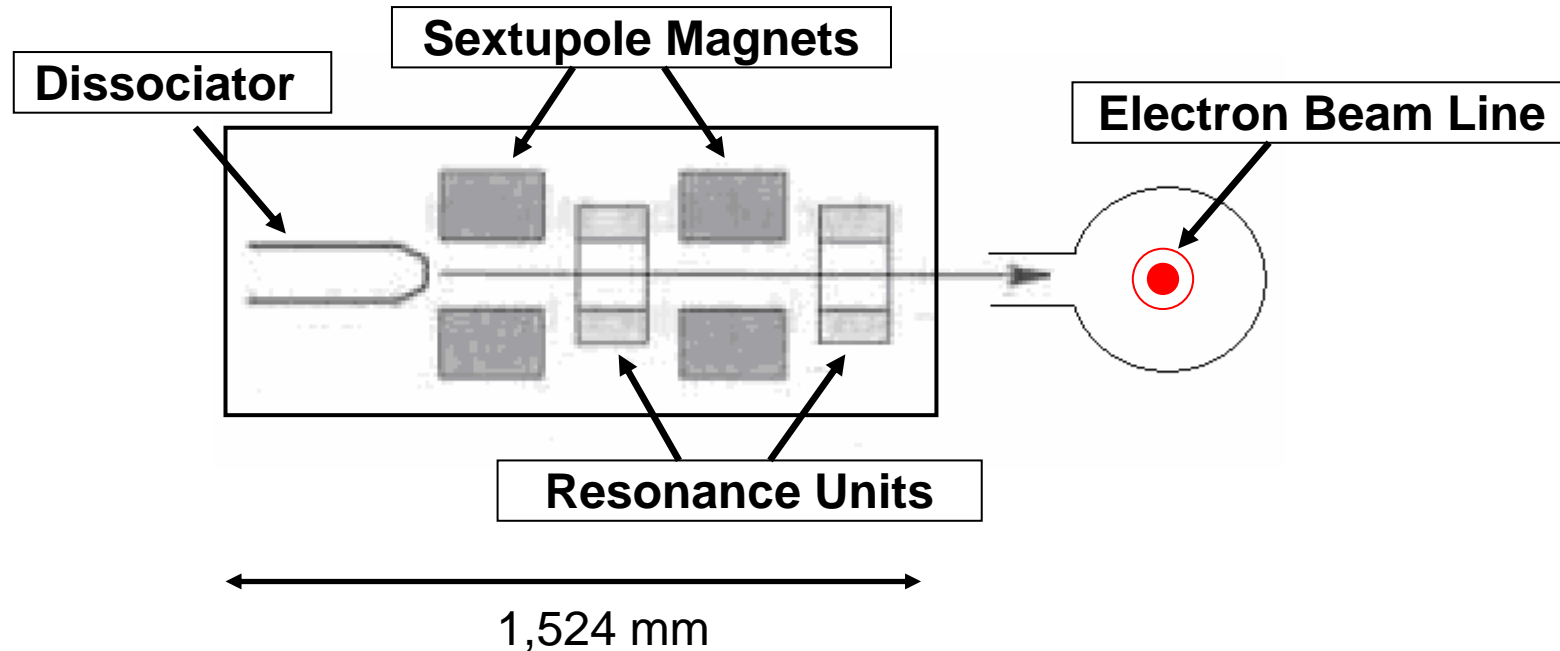


Internal **gaseous** target

The luminosity is still comparable, cf. solid target (C_nH_m-OH , etc.).

The target is pure hydrogen

Atomic Beam Source (ABS)



The ABS can select required proton polarization of the hydrogen atoms using the well-known principle of Stern-Gerlach separation

How dose the ABS control the proton polarization of hydrogen gas ?