UA0700269

HERA-B – MULTI-TARGET EXPERIMENT AT THE 920 GeV PROTON STORAGE RING

V. M. Pugatch

Institute for Nuclear Research, National Academy of Sciences of Ukraine, Kyiv, Ukraine

The design and performance of the internal multi-target system operated at the 920 GeV proton storage ring for the experiment HERA-B (DESY, Hamburg) are described. The nuclear interaction rate of up to 40 MHz has been produced equally distributed over up to 8 targets which were operated simultaneously in the beam halo. The HERA-B targets are thin (~ 50 μm) conductive ribbons or wires (diameter ~ 50 μm) connected through UHV feedthrough to sensitive charge integrators. Secondary electron emission results in positive charge at the target which is proportional to its partial luminosity. The integrated charge is used for the luminosity equalization over operated targets. Issues of the total rate stabilization as well as rate equalization over targets by means of a feedback system are addressed. The strange-, charm- and beauty-quarks physics results obtained by operating the HERA-B multi-target system are presented briefly.

UA0700270

SEARCH FOR TIME-REVERSAL VIOLATION IN KAON DECAYS

P. Depommier, *for the KEK-E246 Collaboration*

University of Montreal, Montréal, Québec, Canada

I will report on experiments which have been performed at the Japanese National Laboratory KEK, Tsukuba, Japan, using stopped kaons from the 12 GeV synchrocyclotron.

The Standard Model (SM) of particle physics has been extremely successful in describing a broad range of phenomena, sometimes with extreme accuracy. However, we are not completely satisfied with the SM, for several reasons. And we are hoping to observe some "physics beyond the Standard Model".

An attractive possibility is to search for observables which are not present (or are negligibly small) in the SM. An example is the transverse polarization of the muon in the decays $K^+ \to \pi^0 \mu^+ \nu$ and $K^+ \to \gamma \mu^+ \nu$, the first one being particularly attractive because it is practically exempt from final-state interaction. The experimental method and experimental set-up will be described and the upper limits obtained will be presented.

UA0700271

MESON-TWO-NUCLEON CLOTHED GENERATORS OF THE POINCARÉ GROUP DERIVED FROM QUANTUM FIELD THEORY: MASS AND VERTEX RENORMALIZATION

V. Yu. Korda, P. A. Frolov

Institute of Electrophysics and Radiation Technologies, National Academy of Sciences of Ukraine, Kharkov, Ukraine

The method of unitary clothing transformation is used to deal with the so-called clothed particle representation [1] in which generators of the Poincaré group acquire one and the same sparse structure in the Fock space of particle states.

In the model of three-linear Yukawa type PS interaction between nucleon and meson fields [2] we calculate the mass and vertex corrections in the second and third orders in the coupling constant respectively. The meson and nucleon mass shifts and the vertex correction on the energy shell can be written as

$$\delta\mu^2 \equiv \mu_0^2 - \mu^2 = \frac{2g^2}{(2\pi)^3}\int\frac{d^3p}{E_p}\left\{1+\frac{\mu^4}{4(pk)^2-\mu^4}\right\}, \qquad (1)$$