K^+ production from pn and pD interactions

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The K^+-production cross section in pn collisions is an important input parameter for model calculations on K^+-production in pA and AA interactions. Experimental data in the close to threshold region are not available yet and theoretical predictions give various numbers ranging from one to six for the ratio of total cross sections σ_n/σ_p depending on the undelying model [1,2,3].

The ANKE spectrometer at COSY-Jülich has been used to measure K^+ production in pD interactions at beam momenta of 2.055, 2.095, 2.65, 2.83 and 3.46 GeV/c. For the extraction of σ_n/σ_p from the pD data at 2.65 and 2.83 GeV/c, a naive phase-space approach has been used assuming that $\sigma_{\mathrm{D}} = \sigma_n + \sigma_p$. Cross sections and missing mass spectra for proton-kaon correlations have been obtained, and a ratio $\sigma_n/\sigma_p \sim 3-5$ has been found [4,5].

During recent beam time experimental data for P_p=3.46 GeV/c on proton and deuterium target have been collected. From these data a ratio between σ_D/σ_p can be extracted. The status of the data analysis as well as results for the cross–sections ratios will be presented.

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