

K^+ production from pn , pp and pd interactions at ANKE/COSY

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An important part of the experimental program at the magnetic spectrometer ANKE (Cooler Synchrotron COSY - Jülich) is the K^+ production in proton-nucleus interactions. Using a deuterium cluster-jet target, data sets on K^+ production in pD interactions have been collected at 2.055, 2.095, 2.6, 2.7, 2.8, 2.95 and 3.46 GeV/c proton beam momentum.

Double differential cross sections for K^+ production in pD interaction as well as correlation spectra have been extracted. The impulse approximation approach has been applied to these data in order to extract the difference between K^+ production on the proton and the neutron targets. For two different beam momenta, 2.95 and 3.46 GeV/c, inclusive double differential cross sections of the K^+ production in pp and pD interactions have also been extracted. This allows one to directly deduce the ratio between K^+ production on the proton and deuteron. Another independent check of the ratio at 3.46 GeV/c has been made using the many particle correlation method.

In the sub-threshold data collected at 2.055 and 2.095 GeV/c first indication for the $pd \rightarrow dK^+\Lambda$ process have been found. This reaction was never been observed before and has to be taken into account in models for K^+ production on nuclear targets. The data will allow us to estimate the total cross for this reaction channel using some model assumptions.

The status of the analysis as well as model development for the full ANKE data set will be presented.

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