Λ-Hyperon Production in the $pp \longrightarrow pK^+\Lambda$ Reaction at Threshold.

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The associated strangeness production in the $pp \longrightarrow pK^+\Lambda$ reaction was measured at the beam momentum of 2.345 GeV/c (i.e. Q_{cm} of 2 MeV) by COSY-11 collaboration.

The complete kinematical reconstruction of events was obtained employing a system of a magnetic field, drift chambers and scintillators. The details are described in Ref. [1]. The momenta, time of flight and finally the invariant masses of both produced proton and kaon were reconstructed. The final identification of the $pp \longrightarrow pK^+\Lambda$ events is shown in fig 1. The 69$\pm$ 7 events were identified, leading to the total cross section of 8.2 $\pm$ 1.8 nb.

The energy dependence of the K^+ production cross section close to threshold was predicted, applying a 3-body phasespace dependance modified by the $p\Lambda$ final state interaction.

Details of this work were published in Phys. Lett. B [2].

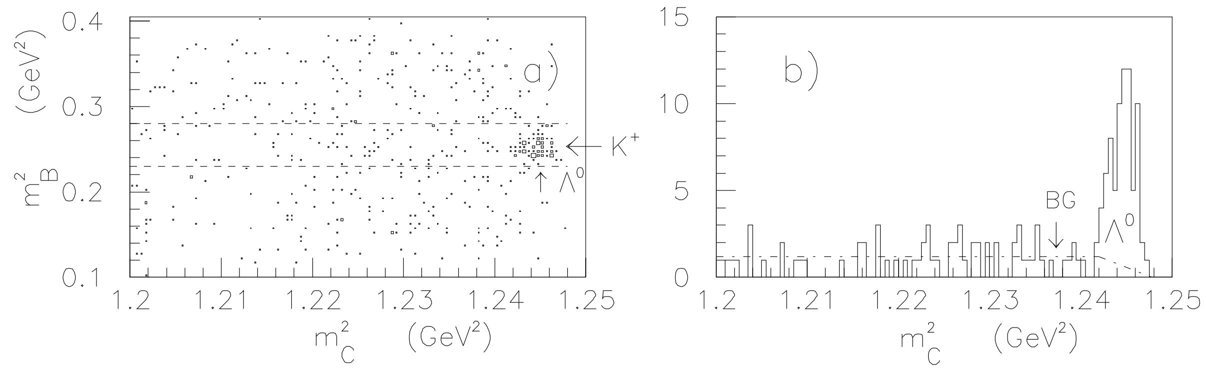

Figure 1: Only events of the type $pp \longrightarrow pK^+C$ were considered. a) Squared invariant mass of the meson K^+ versus the squared missing mass of the (pK$^+$) system. b) Events from the area between the dashed lines in fig. a) were projected onto the x-axis.

References

[1] S. Brauksiepe et al., Nucl. Instr. and Meth. A 376 (1996) 397

[2] J.Balewski et al. Phys. Lett. B 388 (1996) 859 .