Beitrag ID: **25** Typ: **nicht angegeben**

Interactions at proton momentum 24 and 450 GeV/c and experimental check the Low Energy QCD precise predictions.

Dienstag, 16. September 2014 17:30 (1 Stunde)

The presented analysis shows that the atom production in the p-nuclear
interactions is significantly increasing if the momentum of proton Pp will change from 24 up to 450 GeV/c. If we take into account the acceptance of the DIRAC setup at CERN then for Thetalab = 4o and Pp=450 GeV/c the yields of pi+pi-, pi+K-, K+pi- and pi+pi- atoms per one proton-nuclear interaction are 17, 35 and 27 times more, respectively, than at Thetalab = 5.7o and Pp=24 GeV/c. Taking into account the duty factor of the PS and SPS accelerators, the previous numbers will be increased of a factor 4.

The large yield of dimeson atoms at Pp=450 GeV/c allows significantly improve the precision of pi+K-, K+pi- atoms lifetime measurements, to study the long-lived pi+pi- atoms and to evaluate their Lamb shift value. In parallel it will be possible to increase the precision of the pi+pi- atoms lifetime measurement.

All these measurements allow to check the precise Low Energy QCD predictions for piK and pipi scattering length with high accuracy. The yields of K+K- and other atoms will be presented as well.

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Sitzung Einordnung: Poster