



Contribution ID: 49

Type: **Invited**

Strong Interaction Physics with Antiproton-induced Reactions at PANDA

Tuesday, 11 June 2013 09:35 (30 minutes)

PANDA is a universal modular 4pi detector for both charged particles and photons that will study antiproton-proton and antiproton-nucleus collisions using the high-quality internal antiproton beam of the HESR storage ring at the international FAIR facility. With beam momenta between 1.5-GeV/c and 15-GeV/c a wide range of physics topics from the light up to the multi-strange and charmed hadron sector is accessible.

With hadron spectroscopy, hadron structure and reaction dynamics, all relevant aspects in hadron physics are covered in the scientific program of PANDA, which this presentation will give an overview of. One of the key goals is certainly the identification of non-qbar q and also non-qqq hadrons, in particular hadrons with 'constituent' gluons which are allowed by QCD, but also to sharpen our understanding of the charmonium states below and above the Dbar D threshold.

Further issues are baryon spectroscopy, in particular with strangeness, multi-strangeness and charm, studies of the reaction mechanism, in particular in hyperon-antihyperon production, a better understanding of the proton structure from electromagnetic processes, and the investigation of nuclear medium effects on hadron properties and of hard QCD reactions inside the nuclear environment. A modified detector setup will be used for the spectroscopy of double Lambda hypernuclei.

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Session Classification: Hadron Physics

Track Classification: Hadron Physics and Nuclear Physics with Antiprotons