Selected Topics of the Phtsics Program at the PANDA Experiment

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The PANDA experiment has a wide-range physics program which has experienced significant extensions since the initial concept of FAIR was presented [1]. It comprises the spectroscopic study of charmonium states, mesons with open charm, as well as strange and charmed baryons, the search for gluonic excitations such as glueballs and hybrids, the study of the nucleon structure in final states with lepton pairs or photons, and the investigation of nuclear medium effecs. With a modified setup double-Λ hypernuclei will be studied. Recently, feasibility studies of a number of reaction channels addressing the various physics issues have been presented in the first physics performance report for PANDA [2].

The talk will give an overview of the presently envisaged scientific program with PANDA, and particularly focus on aspects in hadron spectroscopy with antiproton-proton collisions and in nuclear medium effects to be studied in antiproton-nucleus collisions.

[1] FAIR Conceptional Design Report, GSI Darmstadt, November 2001

[2] W. Erni *et al.* [PANDA Collaboration], arXiv:0903.3905 [hep-ex]

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