PANDA Experiment

The PANDA Experiment will be one of the key experiments at the Facility for Antiproton and Ion Research (FAIR) which is under construction and currently being built on the area of the GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt, Germany. The central part of FAIR is a synchrotron complex providing intense pulsed ion beams (from p to U). Antiprotons produced by a primary proton beam will then be filled into the High Energy Storage Ring (HESR) which collide with the fixed target inside the PANDA Detector.

The PANDA Collaboration with more than 450 scientist from 17 countries intends to do basic research on various topics around the weak and strong forces, exotic states of matter and the structure of hadrons.

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Physics

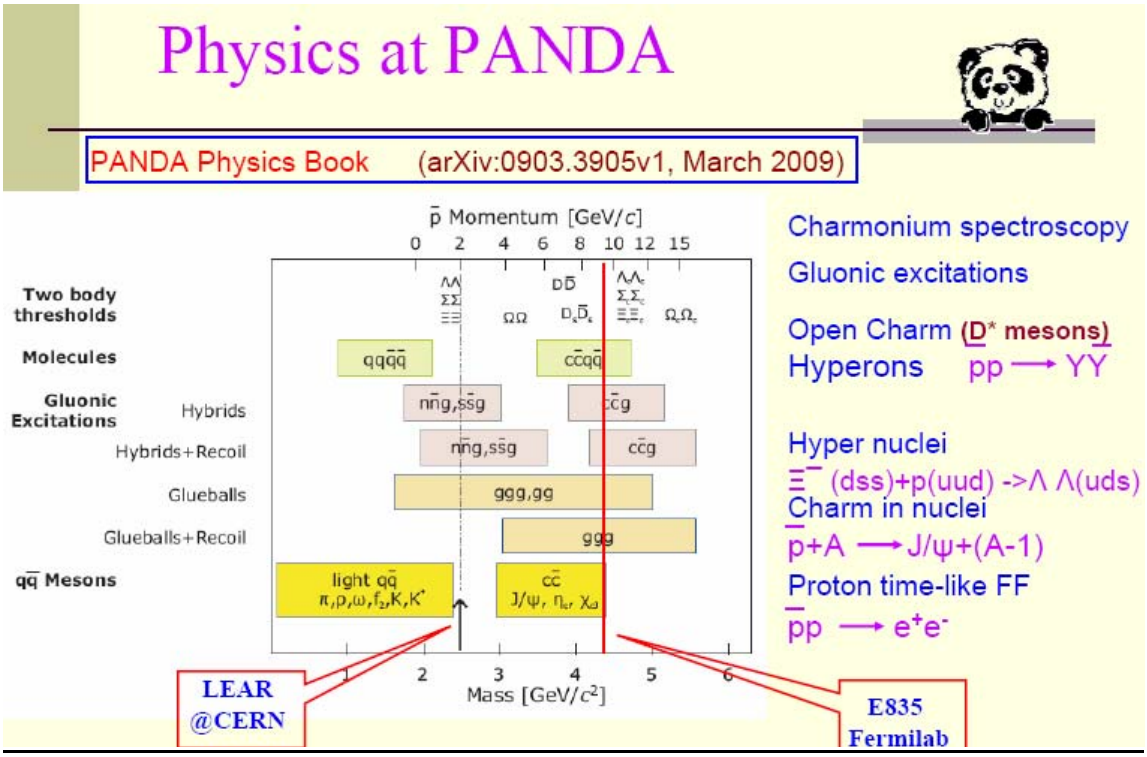
Hadron Spectroscopy: Search for Gluonic Excitations, Charmonium Spectroscopy, D Meson Spectroscopy, Baryon Spectroscopy;

Nucleon Structure: Generalized Parton Distributions Time-like Form Factor of the Proton

Hadrons in nuclear matter

Hypernuclei

PANDA physics is partly summarized in the table below:



Presently, PNPI group participates to Hyperon physics. Given a very wide and interesting PANDA physical program ,in future the group not necessarily be restricted to only hyperon physics analysis.

Description of PANDA detector can be found in PANDA Technical Design Report (TDR)

http://www-panda.gsi.de/framework/detector.php

The proposed detector is subdivided into the target spectrometer (TS) consisting of a solenoid around the interaction region and a forward spectrometer (FS) based on a dipole to momentum-analyze the forward-going particles. The combination of two spectrometers allows a full angular coverage, it takes into account the wide range of energies and it still has sufficient flexibility, so that individual components can be exchanged or added for specific experiments. The hardware commitment of the PNPI group is design and construction of the Time Of Light (TOF) wall of scintillation counters with a very high (about 70-80 ps) time resolution. The TOF Wall will be installed in FS . The scintillation wall is to be used for separation of hadrons (pions, kaons, protons and their anti-particles) using time of flight criterion.