ОБЪЕДИНЕННЫЙ ИНСТИТУТ ЯДЕРНЫХ ИССЛЕДОВАНИЙ

ОБЩЕИНСТИТУТСКИЙ СЕМИНАР

27 июня 2007 (среда) **Конференц-зал ЛТФ**
15.00

HADRON PHYSICS WITH PANDA

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Hadron Physics is the physics of strongly interacting systems. In the past thirty years Quantum Chromo Dynamics (QCD) has evolved as the theory of strong interactions, which describes the interaction among quarks through the exchange of gluons. QCD is believed to be well understood at short distance scales, but this is not longer the case as soon as the basic quark-gluon coupling is not weak anymore. This region of strong QCD is governed by non-perturbative phenomena leading, e.g., to the formations of hadrons. The underlying processes like confinement and chiral symmetry breaking are however not very well understood. This presents a profound intellectual challenge for both experimentalists and theorists. Experiments with antiprotons have proven to be a rich source of information in hadron physics. With the new proposed high energy storage ring HESR for antiprotons at GSI in Darmstadt the physics of strange and charm quarks will be accessible for hadron physics, which received very recently additional attention due to the observation of unexpected narrow states. The strange and charm quark region represents exactly the transition region between the perturbative QCD at short scales and strong QCD. The availability of cooled antiproton beams with momenta up to 15 GeV/c will provide a broad research program that includes among others:

- search for gluonic degrees of freedom like hybrids and glueballs
- spectroscopy of charmonium states
- spectroscopy of hypernuclei and double hypernuclei
- in-medium modifications of charmed mesons.

The talk will give an overview of the physics perspectives and the facility with the planned PANDA experiment.