HK 1: Eingeladene Hauptvorträge

Zeit: Montag 9:10–10:40 Raum: HSZ-02

Hauptvortrag HK 1.1 Mo 9:10 HSZ-02

Reactor and Solar Neutrino Experiments: Recent Highlights and Future Opportunities — •Karsten M Heeger — University of Wisconsin, Madison, WI, USA

Neutrino mass and mixing are amongst the major discoveries of recent years and demand that we make the first revision of the Standard Model in decades. From the first observation of the antineutrino to the discovery of neutrino flavor change, reactor and solar neutrino experiments have played an important role in the history of neutrino physics. Recent solar neutrino measurements have made a precision measurement of the temperature of the Sun, detected the solar 7Be and pep neutrino fluxes, and tested the MSW effect. Reactor antineutrino experiments have observed the disappearance of electron antineutrinos over km-long baselines and made a precision measurement of the last neutrino mixing angle theta13. In the future, solar neutrinos may provide an important probe of the solar metallicity and luminosity constraint while reactor experiments may shed light on the possible existence of sterile neutrinos and probe the mass hierarchy. I will describe recent highlights and future scientific opportunities of reactor and solar neutrino experiments.

Hauptvortrag HK 1.2 Mo 10:00 HSZ-02

Variety of Strangeness Physics with HADES — •Eliane Epple for the HADES-Collaboration — Excellence Cluster "Universe", 85748 Garching

During the last years the HADES collaboration has produced a variety of physics results in the SIS energy regime connected to strangeness. Within this talk I will highlight what we have learned about strange particles produced in light and heavy systems.

In the reaction p+p (3.5 GeV) we have studied resonances like $\Lambda(1405)$, which reveals surprising properties. This resonance might serve as a doorway to a new field of investigation, including also the search for a kaonic nuclear bound state, the so-called ppK$^-$. As it decays into $p+\Lambda$, it is important to understand the final state p+K$^+$+Λ precisely.

To study the cold nuclear medium, we have compared p+p to p+Nb reactions at the same beam kinetic energy of 3.5 GeV. In the strangeness sector, we concentrate on the analysis of K^0_S and Λ's. We want to learn how the medium affects the particle properties. As we compare our data to transport models, effects such as in-medium potentials or in-medium scattering processes can be studied.

In our recent data of Au+Au (1.25 AGeV) I will show our first successes in reconstructing kaons and Λ's. Our future plans with HADES are measurements of pion-induced reactions on elementary and nuclear targets. Again, the focus is on the study of the interaction of strange particles with the ambient nuclear medium to quantify further the particle absorption and nuclear potentials.