Status of strangeness electro-production at MAMI and prospects at PANDA

Patrick Achenbach for the A1 collaboration
Institut für Kernphysik, Joh. Gutenberg-Univ., Mainz, Germany.

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In the new millennium open strangeness production in general, and hypernuclear physics in particular, are undergoing a renewed interest, both theoretically and experimentally.

At the Institut für Kernphysik in Mainz, Germany, the microtron MAMI has been upgraded to 1.5 GeV electron beam energy and can now be used to study strange hadronic systems. KAOS is a very compact magnetic spectrometer suitable especially for the detection of kaons. During the last years it was installed at the Mainz microtron MAMI in the existing spectrometer facility operated by the A1 collaboration. In early 2008, calibration runs have been taken to determine the spectrometer performance, especially the magnet optics. Since September 2008 measurements of kaon production on hydrogen have been successfully performed, demonstrating the capability of the extended A1 facility to perform strangeness electro-production spectroscopy.

The special kinematics for electro-production of hypernuclei requires the detection of both, the associated kaon and the scattered electron, at forward laboratory angles. In 2009, the KAOS spectrometer will cover simultaneously electron scattering angles close to 0° and kaon scattering angles around 5° up to 15° in order to extract dynamical information from the K^+ angular distribution. While the instrumentation of the hadron arm is operational, a completely new radiation hard and fast coordinate detector of the spectrometer's electron arm is under development.

The single hypernuclei research programme will be complemented by experiments on multi-strange systems with $\overline{\mathrm{P}}$ANDA at the planned FAIR facility. The $\overline{\mathrm{P}}$ANDA hypernuclear programme shall reveal the $\Lambda\Lambda$ strong interaction strength. In the anti-proton storage ring HESR relatively low momentum Ξ^- will be produced in $\overline{\mathrm{p}}\mathrm{p} \to \Xi^-\overline{\Xi}^+$ or $\Xi^-\overline{\Xi}^0$ reactions. Due to the large yield of hyperon-antihyperon pairs produced a high production rate of single and double hypernuclei in an active secondary target under unique experimental conditions will be feasible. For the high resolution spectroscopy of excited hypernuclear states an efficient, position sensitive HPGe array is foreseen.

In my talk the status of the experiments and future prospects are presented.