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# Hyperon physics - past, present and future

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Ever since first observed in experiment, hyperons have played an important role in our understanding of fundamental interactions. In the early days of particle physics, the newly discovered Lambda, Sigma and Xi hyperons provided a key to the eight-fold way of the strong interaction from which the quark model emerged. A basic question in hyperon physics is: "What happens if we replace a light quark in a nucleon with a heavier one?". The production of hyperons involves the creation of a heavy (s, c, b) quark-antiquark pair, a process where the energy scale is governed by the mass of the produced quark. The strange quark probes QCD in the intermediate domain between the non-perturbative light-quark ChPT sector and the charm sector where perturbative QCD becomes more relevant. Strange hyperons therefore provide a window to the strong interaction in a domain where our understanding remains scarce. The weak, self-analysing decay of hyperons gives access to spin observables. These are of interest for many reasons; for example as a test of CP violation in baryon decays, the role of spin in strong interactions and hyperon electromagnetic structure. Hypernuclei give unique possibilities to study nucleon-hyperon and hyperon-hyperon interactions, which in turn give insight into e.g. neutron stars. This talk will focus on strange hyperons, what we have learned from previous experiments and summarise ongoing activities at e.g. CERN, JLAB, JPARC, SLAC, BEPC-II and DAPHNE. Finally, the unique opportunities provided at the future FAIR facility will be outlined.

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