Contribution ID: **267** Type: **Invited/Leading contribution**

Probing CP symmetry with polarised and entangled hyperons

Why does our Universe contain so much more matter than antimatter? If not fine-tuned in the Big Bang, the abundance of matter must have been dynamically generated, e.g. through Baryogenesis. This, however, requires the existence of processes that violate charge conjugation and parity symmetry (CP). Hyperon decays have been proven a powerful diagnostic tool to study CP violation, thanks to the traceable spin. In particular, spin polarised and entangled hyperon-antihyperon pairs allow for high precision CP tests. However, since hadron decays occur through a complex interplay of strong CP conserving processes on the one hand and weak, possibly CP violating processes on the other, the latter may be diluted or completely hidden by the former. In a recent paper from the BESIII collaboration, a new method is outlined where sequentially decaying double-strange hyperon decays are utilized to separate strong and weak contributions. This method increases the sensitivity to CP violation by up to two orders of magnitude. In this talk, I will demonstrate this method and present the results when applied to data from BESIII. In addition, I will discuss the possibilities that come with the advent of the future PANDA experiment at FAIR.

Author: SCHÖNNING, Karin

Presenter: SCHÖNNING, Karin

Track Classification: New Facilities and instrumentation