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Hyperon physics at BESIII

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With the large data sets of e^+e^- annihilation at the J/ψ and $\psi(3686)$ resonances collected by the BESIII experiment, multi-dimensional analyses making use of polarisation and entanglement can shed new light on the production and decay properties of hyperon-antihyperon pairs. In a series of recent studies performed at BESIII, significant transverse polarization of the (anti)hyperons has been observed in J/ψ or $\psi(3686) \rightarrow$ hyperon anti-hyperon pairs. The decay parameters for the most common hadronic weak decay modes were measured, and due to the non-zero polarisation, the parameters of hyperon and antihyperon decays could be determined independently of each other for the first time. Comparing the hyperon and antihyperon decay parameters yields precise tests of direct CP-violation that complement studies performed in the kaon sector.

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