

Abstract Submitted
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Baryon spectroscopy with heavy flavors at J-PARC HIROYUKI
NOUMI, RCNP, Osaka University, E50 COLLABORATION — How are hadrons formed? This is a fundamental question in hadron physics. The constituent quark model describes the properties of hadrons in the ground state rather successfully. However, it fails in some excited states, where another effective degrees of freedom, such as diquarks, hadrons, and/or other quark/gluon clusters, may play important roles in hadrons. To answer the above-mentioned question, we need to understand the dynamics of ingredients of hadrons further. Baryons with heavy flavors (heavy baryons) provide unique opportunities to investigate quark dynamics in baryons. Owing to the so-called heavy quark symmetry in QCD, heavy baryons are characterized by the motions of the heavy quark(s) and the others. For example, we expect that the nature of light- qq diquark motions in charmed baryons appears in the level structure, production rates, and decay branching ratios. Therefore, we proposed a spectroscopic study of charmed baryons via the $p(\pi^-, D^{*-})$ reaction at the J-PARC high-momentum beam line (P50). Systematic measurements of the excitation energy spectrum and decays of charmed baryons can be carried out by means of the missing mass technique with a large acceptance spectrometer. I will introduce the proposed experiment and discuss possible studies.

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