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## $\Lambda_c$ baryon production in effective Lagrangian approach

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In the near future, experimental studies of charmed baryon productions will be carried out at PANDA and J-PARC. In the PANDA experiment, charmed baryon productions will be studied in proton-antiproton annihilation reactions. At J-PARC, the spectroscopy study of charmed baryons via the pion induced reactions at a high-momentum beam line will be investigated. Therefore, it is a great opportunity to perform a theoretical study of charmed baryon production reactions systematically while these experimental facilities are now under investigation. In this work, charmed baryon production reactions (for example,  $p\bar{p} \rightarrow \Lambda_c \bar{\Lambda}_c$  reaction) will be investigated by using effective field theory. We start from the construction of the effective Lagrangian satisfying  $SU(2)$  flavor symmetry, heavy-quark symmetry, and large- $N_c$  analysis. Then, cross sections of charmed baryon production reactions will be computed from the effective Lagrangian. Our predictions may be tested by the PANDA and J-PARC facilities in the future.

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