

Prospects for discovering new physics in charm sector through low-energy scattering processes

$$e^- p \rightarrow e^- (\mu^-) \Lambda_c$$

We explore the possibility of discovering new physics, particularly leptoquarks, through the low-energy scattering processes $e^- p \rightarrow e^- (\mu^-) \Lambda_c$ —both are accessible in an ep scattering experiment in the near future. In the framework of low-energy effective Lagrangian, we demonstrate that, compared with the conventional flavor-changing-neutral-current weak decays of charm hadrons and the dilepton productions at high-energy colliders, the low-energy scattering processes can provide more competitive potentials for hunting the NP. Meanwhile in specific LQ models, we show that promising event rates can be expected for both the scattering processes, and point out a potential path to distinguish the scalar and vector LQs.

Presentation type

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