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Probing invisibles with rare charm decays

Monday, July 17, 2023 2:00 PM (20 minutes)

We study rare charm decays with missing energy to probe light degrees of freedom.
Specifically, we investigate axion-like particles and light Z' bosons with dark fermions.
We also consider EFT models with light neutrinos of both chiralities.
Observables of both charm mesons and baryons are examined to assess their sensitivity and potential to probe NP.
We find that the missing energy distribution of $\Lambda_c \to p\nu\bar{\nu}$ can signal the presence of right-handed neutrinos in addition to the left-handed ones of the SM.
We further constrain the NP models by utilizing the upper limits on $D^0 \to invisible$ and $D^0 \to \pi^0 + invisible$ and work out predictions for 2-body and 3-body kinematics of
$\Lambda_c \to p + invisible$.

Consent

I consent to recording/broadcasting my presentation.

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