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Rare charm decays to dark photon and Axion-like particle at BESIII

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The BESIII experiment is a symmetric e^+e^- collider operating at c.m. energy from 2.0 to 4.95 GeV. With the world's largest data set of J/ψ (10 Billion), $\psi(2S)$ (2.6 Billion), and about 25 fb⁻¹ scan data from 3.77 to 4.95 GeV, we are able to search various dark sectors produced in e^+e^- annihilation and meson decay processes. In this talk, we report the search for dark photon candidate in $e^+e^- \rightarrow \gamma A'$ with invisible decay. The invisible decay of a light Higgs boson A_0 in $J/\psi \rightarrow \gamma A_0$, dark sectors in Λ/Λ_c invisible decay processes are also searched. Axion-like particles (ALPs) are pseudo-Goldstone bosons arising from some spontaneously broken global symmetry, addressing the strong CP or hierarchy problems. The BESIII experiment has collected 10 Billion J/ψ and 2.6 Billion $\psi(2S)$ events, which is the largest J/ψ & $\psi(2S)$ data set in the world. With these data, the BESIII experiment searches for an Axion-like particle with mass in o(GeV) scale in $J/\psi \rightarrow \gamma a$, with $a \rightarrow \gamma \gamma$.

Consent

I consent to recording/broadcasting my presentation.

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