



Contribution ID: 11

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

*Monday, 17 July 2023 14:20 (20 minutes)*

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  $J/\psi$  (10 Billion),  $\psi(2S)$  (2.6 Billion), and about 25 fb<sup>-1</sup> 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  $\Lambda/\Lambda_c$  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  $J/\psi$  and 2.6 Billion  $\psi(2S)$  events, which is the largest  $J/\psi$  &  $\psi(2S)$  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

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