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Dark sector and Axion-like particle search 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/psi (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- ->gamma A’ with invisible decay. The invisible decay of a light Higgs boson A0 in J/psi->gamma A0, 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-> gamma a, with a->gamma gamma.

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