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Constraining Particle Dark Matter with eROSITA Early Data

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Many well motivated dark matter (DM) particle candidates can decay into detectable X-ray photons. We analyze eROSITA Final Equatorial Depth Survey (eFEDS) from eROSITA early release data to search for unexplained X-ray lines that could indicate DM signal. Having discovered no extra line, we set limits on DM decay rate in mass range between $2 - 18$ keV, and constrain the parameter space of 3 DM particles: sterile neutrino, Axionlike particles, and dark photon. Finally we also study the projected sensitivity of eROSITA full sky search, showing that eROSITA is expected to set stringent limits in the soft X-ray band.

Submitted on behalf of a Collaboration?

No

Authors: FONG, Chingam (The Chinese University of Hong Kong); Prof. NG, Kenny C. Y. (Chinese University of Hong Kong); Mr LIU, Qishan (Chinese University of Hong Kong)

Presenter: FONG, Chingam (The Chinese University of Hong Kong)

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