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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 data release 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 two DM particles: sterile neutrino and axion-like particles. 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.

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