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Reflection-dominated Compton-thick AGN Candidates in the SRG/eROSITA Lockman Hole Survey

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We search for reflection-dominated Compton-thick active galactic nuclei (CT AGN) candidates in the Lockman Hole region using the SRG/eROSITA Lockman Hole survey data. To this end, we selected sources with anomalously hard photon indexes in the $0.3 - 8.0$ keV band, untypical for type I AGN. In particular, we required that the upper end of the 90% error interval did not exceed a fudicial boundary of $\Gamma = 1.3$. We thus found 291 sources which constitute a rare subpopulation among extragalactic X-ray sources detected by eROSITA in the Lockman Hole field, $\approx 5\%$. These sources constitute the eROSITA sample of CT AGN candidates in the Lockman Hole field. We further divide the sources into three categories depending on the availability of the reliable redshift and statistically significant detection of the intrinsic absorption. We present two catalogues, the bright subsample (37 sources) and the faint one (254). We estimate their fraction and sky density. We show examples of individual spectra and use stacking analysis to search for possible redshift evolution of their properties with redshift. The catalogues of CT AGN candidates are meant to be used to plan future studies and follow-ups.

Author: BELVEDERSKY, Mikhail (IKI RAS, HSE University)

Co-authors: Prof. GILFANOV, Marat; Dr BYKOV, Sergei (Max Planck Institute for Extraterrestrial Physics)

Presenter: BELVEDERSKY, Mikhail (IKI RAS, HSE University)

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