



CAASTRO
ARC CENTRE OF EXCELLENCE
FOR ALL-SKY ASTROPHYSICS

eROSITA_DE / CAASTRO Expression of Interest Form

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- 1 I'd like to pursue optical follow-up of eROSITA X-ray sources with a particular focus on galactic compact objects. The main resource to be used from CAASTRO side will be SkyMapper, which will be instrumental to identify possible counterparts to X-ray sources via positional coincidence, colour, and perhaps variability. Despite being a bit shallow (compared to e.g. SDSS, DES and PS) it has some unique properties by (a) being southern, (b) being all-sky, and (c) by carrying at least rudimentary variability information. Galactic compact objects (at the limiting depth of SkyMapper these will be white-dwarf accreting systems of all flavours in the main plane) are spread over all the sky with a concentration towards the galactic plane and have low source densities (compared to the abundant AGN) but similar X-ray and X-ray-to-optical properties as the AGN. Building significant samples thus requires large-scale surveys and benefits from the inclusion of data obtained also at rather low galactic latitudes. Science questions to be addressed by such a survey are related to studies of the galactic binary population, the search for SNIa progenitor candidates, the synthesis of the Galactic Ridge X-ray Emission and similar. Whether the identification work can (and shall) be extended towards a spectroscopic follow-up utilizing the AAT needs to be explored. The source density of compact object candidates will be a bit low, hence a coordinated approach with other similar

projects seems to be appropriate.

Pre-launch activities could be ramped up by exploiting the 3XMM catalogue.

- 2 Potential collaborators in this project within eROSITA_DE are the members of the Compact Object working group which are located at the MPE, at the Universities of Bonn, Erlangen-Nuremberg, Munich, Tübingen, and at the AIP.