

Individual External Collaborator Project Proposal

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WG(s) involved in the project: eROStars, coordination with eROCompact

Scientific Project description (up to two pages, all included):

We investigate X-ray counterparts of Be stars in the eROSITA all-sky survey data. The group of Be stars, i.e. B stars with emission lines, is a diverse group among the population of massive stars. Likewise the X-ray properties of Be stars differ significantly, presumably related to the respective origin of the Be phenomenon and potential multiplicity of the studied stellar system.

Using the BeSS (Be star spectra database) sources as prime underlying sample, we identify potential X-ray counterparts of known Be stars, study their X-ray properties and investigate mechanisms responsible for the generation of the X-ray emission. For counterpart identification we use astrometric data from Gaia supplemented by other catalogs. In addition optical spectroscopy is used to further characterize the objects of interest.

The project is a collaboration with Y. Naze from the Liege stellar group, that are our partners in the operations of the TIGRE telescope and involved in other joint projects that study the massive stars regime. Y.Naze provides important optical data/spectroscopy for the characterization of the sources, massive star expertise, support in data interpretation and source modelling.

Beyond the group of Be stars an extension of the joint study to other massive stars is planned. The aim is to also hire a PhD student in a co-tutorship between Hamburg observatory and Liege University.

Required data, supporting datasets and/or tools:

eRASS1+ source catalogs, events for selected sources (analysis will be done at Hamburg observatory by J.Robrade, C. Schneider...)

List of Potential Collaborators within eROSITA_DE

C. Schneider, S. Czesla, J. Schmitt

Expected Outcome

Scientific paper(s) on populations of massive stars.

Expected duration of the project

Update Nov. 2022: Publication on the Be stars project is in preparation and planned for DR1. To continue, IEC is extended by one year until 30.11.2023. Project-specific everything stays the same.

Starting with eRASS1 the project is expected to be carried out over the full all-sky survey phase. A request of EC status extension is thus likely.

Responsibility of the eROSITA member sponsor of the project:

J. Robrade (and C. Schneider), as sponsoring member(s), will ensure that eROSITA data are accessed and used for the purposes of this project only, and not in a way that would negatively affect the scientific interests of existing collaboration members.