

# JET-DRIVEN BOW-SHOCKS NEAR GALACTIC BLACK HOLE X-RAY BINARIES

## Abstract

Accretion and the generation of jets are connected phenomena that play a central role in the Universe through a process known as feedback. Via this process, accreting black holes and neutron stars return a large fraction of their accreted energy and matter to their surroundings causing the interstellar medium (ISM) to heat up.

Such jet-ISM interaction sites have been observed for decades near supermassive black holes powering AGN as radio lobes and bow shocks. Similar structures are also expected to become visible as dim radio-emitting shocked regions near galactic black-hole X-ray binaries, although only two such sites have been observed till now. Such interaction regions can be used as calorimeters to accurately estimate the amount of energy transferred by X-ray binaries via their jets back into their environments.

We propose deep observations (15 hr on-source time each, 37 hr in total including overheads) at L-band of two black hole X-ray binaries that are promising candidates to detect jet-ISM interaction sites, GRO J1655-40 and GRS 1758-258. We will use these observations to investigate the presence of extended structures near these two Galactic black hole X-ray binaries in order to quantitatively determine the jet feedback on the environment from stellar mass black holes, and double the sample of known black hole X-ray binary jet-ISM interaction sites.