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Relativistic jets from a new Black Hole transient in our Galaxy

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Microquasars are X-ray binary systems containing neutron stars or black holes orbiting around a companion star, that are able to launch spectacular jets of plasma at relativistic speeds. These systems are mostly observed in our Galaxy and allow us to study the jet formation and emission on human timescales, making it possible to unveil the mechanisms that link accretion and ejection in compact objects. Multi-wavelength observations are fundamental to achieve this goal. We present here the monitoring campaign of MAXI J1348-630, a new black hole transient which entered in an outburst phase in January 2019 and that we observed for 11 months in the radio band with the MeerKAT and ATCA interferometers and in X-rays with the MAXI and Swift space telescopes. We tracked the outburst evolution as the system transitioned into different spectral states and we studied of the correlation between the radio luminosity, linked to the presence of synchrotron emitting jet, and the X-ray luminosity, produced by the inner accretion flow, thus being able to probe the accretion-ejection coupling down to very low levels of a black hole transient activity, which are still greatly unexplored. Moreover, we detected two relativistic radio-emitting jets travelling away from the black hole with apparent superluminal speeds, for which we show results on the emission, motion and energetics.

Keywords: High energy astrophysics – Black Holes