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Real-Time Evolution Of Relativistic Jets In Microquasars

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Jets appear in Astrophysics in very different environments and scales across the Universe, and they seem to share common features in all cases. Their study can then help us to understand a widespread outflow mechanism. However, their large-scale dynamics remain hidden to observation along human time scales because they usually develop too slowly, either because of their large sizes (in active galactic nuclei), or because of their slow velocities (in Herbie-Haro objects). However, microquasars combine both relatively short extensions and relativistic velocities, giving us the chance to better study the jet evolution and interaction with their environments in almost real time. Here we present, for the first time, an observational proof of such large-scale morphological changes in the case of GRS 1758-258. Archival radio observations have been used to conform a set of photograms of the evolution of such microquasar throughout two decades, confirming its structural variations that may be related to hydrodynamical instabilities. In addition, we have studied the prototypical microquasar 1E 1740.7-2942 in radio wavelengths to find out again changes in the jet morphology, that seem to be mainly originated by precession in this case. These results let us to confirm their up-to-now disputed Galactic nature and provide a benchmark for testing theoretical models accounting for relativistic jets dynamics and their interactions with the medium.

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