

Recent advances in the experimental simulation of X-ray binary stars accretion shocks

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Abstract

The capability to produce in laboratory radiation hydrodynamic flows relevant to high-energy astrophysical environments is a real opportunity to progress in their modeling. Recently we have proposed an

original approach which allows to study the radiative accretion shocks in magnetic cataclysmic variables. Using an adapted target design, we can explore, test and constraint different aspects of their specific physics. In this work we will present the recent theoretical and experimental works and the connection with astronomical observations. The first similarity results will be extended to the set of physical regimes of the radiative accretion column: from the different accretion shock regimes to the bombardment regime. The link with laboratory astrophysics experiments, and specifically the opportunity opened by the Megajoule facilities, will be discussed in detail.