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Numerical simulations of the evolution of Astrospheres in the different interstellar conditions

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Astrospheres are bullet-shaped structures formed by the motion of stars through the interstellar medium. This study analyse the impact of the star's outflow parameters, including density, temperature, and magnetic field, on the evolution of the astrosphere using hydrodynamic and magnetohydrodynamical models. The analysis focuses on the compression ratio, velocity and width of the bow shock (outer shell). Hence, the analysis showed that the interstellar medium density affects the astrospheric structure, while the ISM magnetic field can either expand or compress the astrosphere's outer structure. This study also considers various other parameters, such as the time taken to form an astrosphere structure, the effect of the ISM temperature, the mass loss rate, the velocity outflow, and cooling. The results highlight the complex nature of astrospheres and their evolution, and provide a better understanding of these fascinating structures.

Apply to be considered for a student ; award (Yes / No)?

yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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