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MHD simulations of Lambda Cephei like astrospheres

In this work simulations of the interaction of a stellar wind with the interstellar medium, which forms an astrospheric cavity, are presented. Results are shown where the astrosphere of Lambda Cephei is simulated for three different scenarios, corresponding to three different ISM speeds. The results can be visualized as density contour plots as well as radial profiles for different simulation periods. From these results, as the ISM speed increases, the astrospheres become more compressed and more bullet-shaped due to the increasing ISM ram pressure which reduces the bow shock and termination shock distances. Also shown are the importance of radiative cooling on astrospheric evolution. The inclusion of this process in magneto-hydrodynamic simulations result in a thinner outer astrospheric shell due to a decrease in thermal pressure.

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