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On the influence of a magnetized disc on the stellar inner magnetosphere

Recent simulations of the star/disc interaction process (e.g. Romanova et al 2006, Bessolaz et al 2008) show that ejection events have almost ballistic properties occurring along the current sheet of the opening stellar magnetosphere whereas recent observational data are consistent with collimated jets from disc wind configurations (Ferreira et al. 2006).

We recently included in our simulations a disc magnetic field in addition to the stellar field. This disc field is chosen to be in the antiparallel configuration and in equipartition with the disc thermal pressure in order to study the possibility of collimation of the ejected plasmoids along the stellar rotation axis by the outer disc wind configuration. This simulation makes it also possible to test for the first time the launching of jets from Keplerian discs by taking into account specifically the inner boundary due to the central object. Results of such a mixed disk/star magnetic field configuration will be presented with special emphasize on the efficient feeding of the accretion funnel that yields steadier configurations, thus preventing oscillations at the disc inner edge like in classical magnetospheric simulations with a visco-resistive accretion disc.