

Poster: From Infall to Outflows of Massive Protostars

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We model the long-term evolution of magnetized, massive prestellar cores from their initial gravitational collapse, through the formation of circumstellar disks, the launching of fast collimated jets and wide angle winds, to the final cloud dispersal and outflow broadening. Our simulations resolve a high dynamic range in space and time and enable us to analyze the physical mechanisms of the jet launching process in detail, investigate feedback properties of the outflow and distinguish various effects leading to outflow broadening. In a comprehensive convergence study of spatial resolution and sink cell size, we investigate time-dependent jet launching mechanisms, disk evolution and feedback properties. Thus, we derive converged physical results and their corresponding resolution criteria. We compare our results with established analytical models for stationary jets (Blandford and Payne (1982); Pelletier and Pudritz (1992); Lynden-Bell (2003)) and with recent observations (e.g. Sanna et al. (2015)).

Outflows and Disks