

Sub-arcsecond imaging of the AB Aur molecular disk and envelope at millimeter wavelengths: a non-Keplerian disk

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Abstract. We present sub-arcsecond imaging of AB Auriga obtained with the IRAM Plateau de Bure Interferometer in the isotopologues of CO and in continuum at 1.3 and 3 mm. These images reveal that the circumstellar environment of AB Aur is widely different from the protoplanetary disks surrounding T Tauri stars like DM Tau or LkCa 15 or other Herbig Ae stars like MWC 480. The continuum and the isotopes lines emission show a "spiral-like" brightness enhancement, that prevent an accurate determination of the system inclination. Nevertheless, a robust result of our analysis is that the disk is not in Keplerian rotation. These characteristics (spiral feature and non-Keplerian rotation) could be related to an early phase of the stellar formation, or to a perturbation of yet unknown origin (such as a low mass companion).
