

Combining hydrodynamics, thermochemistry and radiative transfer to probe radial substructures in edge-on circumstellar disks

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The vast majority of radial substructures have been detected in the continuum and molecular emission of circumstellar disks that are moderately inclined. In such disks and because the molecular line emission comes from a warm upper layer, we do not have a direct access to both the radial distribution and the vertical stratification of dust grains and molecules. The large program ALMA DiskStrat tackles this question by examining the radial and vertical structures of 9 edge-on disks, providing a large diversity of emission lines with high spatial and spectral resolution. I will present a new pipeline to model realistically circumstellar disks, connecting gas+dust hydrodynamic simulations with the GPU-accelerated code `IDEFIX`, thermochemical calculations with `PRODIMO`, and radiative transfer computations with `RADMC3D` and `PRODIMO`. I will then show some preliminary results of this pipeline applied to one of the edge-on disks of the DiskStrat sample, hunting down potential radial substructures in synthetic continuum and molecular emission maps.