Opacities for protoplanetary disks

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The increase of computer power and the growing knowledge about dust and gas species in different astrophysical environments during the last decade allows the consideration of more complicated opacity models in a variety of hydrodynamical calculations. Unfortunately, there is a lack of studies which focus on calculations of the opacity due to both dust grains and gas species for temperatures between few and few thousands K, typical of protoplanetary disks, based on the best estimates on the dust composition and recent improvements in molecular line lists.

Our aim is to introduce such a model using the unification of dust– and gas–dominated opacities. Additionally, we investigate the influence of the Rosseland mean values derived with two different opacity models on the thermal structure of an active steady-state accretion disk.