

Evoltrans code details

Basic flowchart:

- Set defaults for various parameters and read in inputs from `./input/diskevol.inp`
- Read the radial grid, alpha, sigma_gas and set 2prsigma Sigma_vapor also defined here
- Read Rosseland mean opacity table for dust [NOTE: not being used]
- Set dust grain size, gastodust and pahscalefactor
- Calculate L_acc and G0, mu
- *Call radialrtinit routine*
- Calculate Tmid from flaring angle, set scaleheight and disk temperature
- Main Run – step over time
 - Calls *photoevaporation routine* to get sigmadotpe; Save data
 - Loop over time: for each step do
 - Set a non-adaptive timestep, but check if sigma is varying fast
 - Optional call to infall here [typically skip]
 - Call *photoevaporation routine* and slowly ramp up with time first
 - Optionally add disk gravity to star mass
 - Call to *compute_vr_v0_difcoef* [computes radial velocity and diffusion coefficient]
 - Call to *update_sigma_diff* [does the diffusion with above coefficient]
 - Evolve dust in a similar way
 - Get the sigma dust fraction as function of mass for each size after a call to dustcollision [needs alpha, snowline radius and grid, a]
 - Scale the pabs with the smallest grains
 - Calculate Stokes for each size and radius
 - Check if the grain photoevaporates
 - Compute vr, D and diffuse this dust component as for gas above
 - Save this sigmadust and update the gastodust ratio
 - Do ice formation
 - Estimate midplane number density
 - Check for partial pressure for water ice (and co)
 - Calculate fractional mass in ice (all vapor at t=0) and distribute this equally in all grain size bins as ice
 - Rest of the sigma is in vapor
 - Update gas/dust to account for ice
 - Check if planetesimal formation has occurred
 - Calculate mass weighted stokes [what is this]
 - See if gas/dust falls below critical value
 - For each grain with some minimum stokes, put all of its sigma in planetesimals
 - Adjust for the ice and solid dust fractions appropriately
 - Update gas to dust after planetesimal formation
 - Save data if needed