



can approximate P(K) well on large scales but on small, non-linear, scales our methods preak down (~7 Mpc)

currently use N-body simulations to approximate PCK) in this non-linear regime but it is expensive

we therefore need a quicker, simpler way to calculate P(k) on non-linear scales

## The trajectories approach

we can describe particle trajectories using the Zel'dovich approximation (N-b'ody init. conditions)

Why not attempt to evolve the trajectories by hand?

include non-linear effects (grav int etc.) into our trajectory to probe the small scales P(K) was approximated in Bartelmann et al. (2014) and Ali-Haimoud (2015) using this approach





## How well does it perform?

## For an EdS universe and plane wave solution



Lane et al. (2019, in prep)

## Questions ?