

Conclusions so far :

- Linear modes of gas+star discs can be retrieved accurately and fast using a unified mathematical and numerical approach.
- Many astrophysically interesting quantities (density, velocity field, ...) can be computed, even for sparsely populated regions of phase space, allowing the relevant dynamics underlying the eigenmodes to be studied in detail.
- A high mass fraction of cold gas favors the formation of bars. This has recently also been observed in numerical simulations of Milky Way sized galaxies (Seo, Kim, Kwak, Hsieh, Han, Hopkins 2019).

To do :

Study effect of gas cooling on the eigenmode spectrum