**INTRODUCTION**

- Most young stars initially surrounded by protoplanetary discs
- Discs: precursors of planetary systems

**Observed disc sizes**
- Radius containing 90% of luminosity
- Typical disc sizes: 100 – 200 AU
- Most stars form in clusters [1]
- In dense clusters, encounters with other stars are common [2]

**STAR-DISC ENCOUNTERS**

- Encounter simulations
  - Low-mass disc
  - Prograde, coplanar, parabolic encounter
  - Star-disc encounters can be generalised to disc-disc encounters [4]
  - Parameter range like in ONC [2]
  - Task: Find new “edge” of disc

**DISC-SIZE DETERMINATION**

- Depending on encounter type: many particles on eccentric orbits
- No straightforward definition of size
- Time average of surface density distribution over 1000 yr after encounter
- Mimic observational size determination
- Use steepest gradient in outermost density contrast (Fig. 3)
- Error estimate: distance to inner edge of density contrast

Have a look at a encounter visualisation on [http://tiny.cc/encounter_movie](http://tiny.cc/encounter_movie)

**CONCLUSION**

- Disc size definition: Steepest gradient in surface density
- Fit function for sizes over parameter range in clusters:
  \[ m = M_2/M_1 = [0.3 – 90] \]
  \[ p \geq [0.1 – 2] \] (depending on \( m \))
- Applicable to all types of clusters

**REFERENCES**