

STAR FORMATION IN A TURBULENT MOLECULAR CLOUD SELF-REGULATED BY PHOTO-IONISATION FEEDBACK

A NUMERICAL EXPERIMENT

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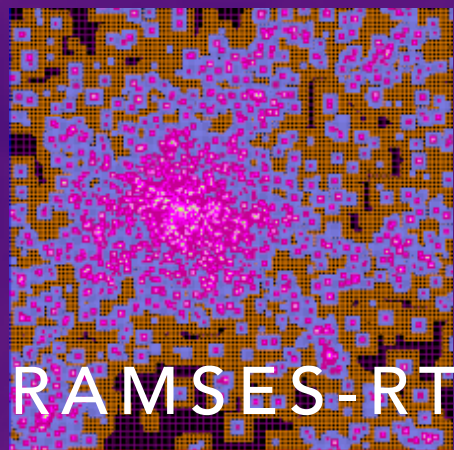
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Stars form in molecular clouds. How do we get to gas-free (bound? unbound?) star clusters?

INTRO

We study the effect of massive stars feedback on SC properties.



NUMERICAL METHODS

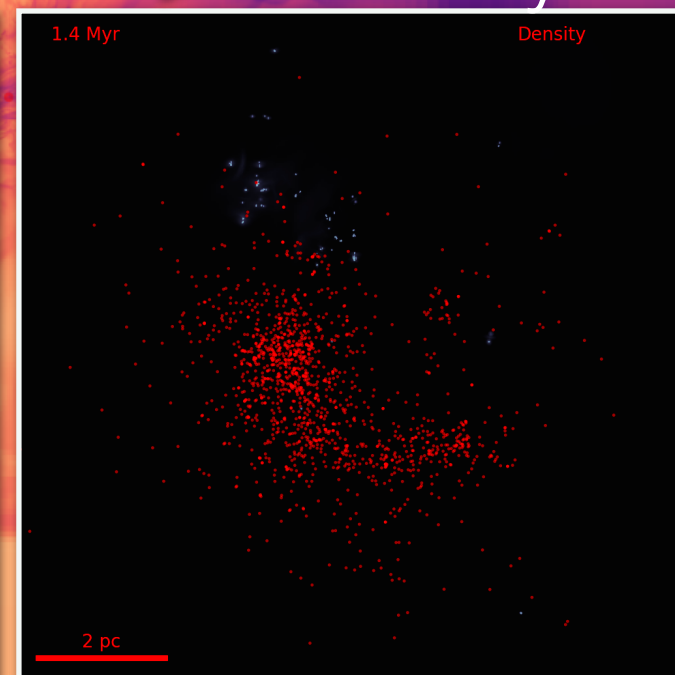
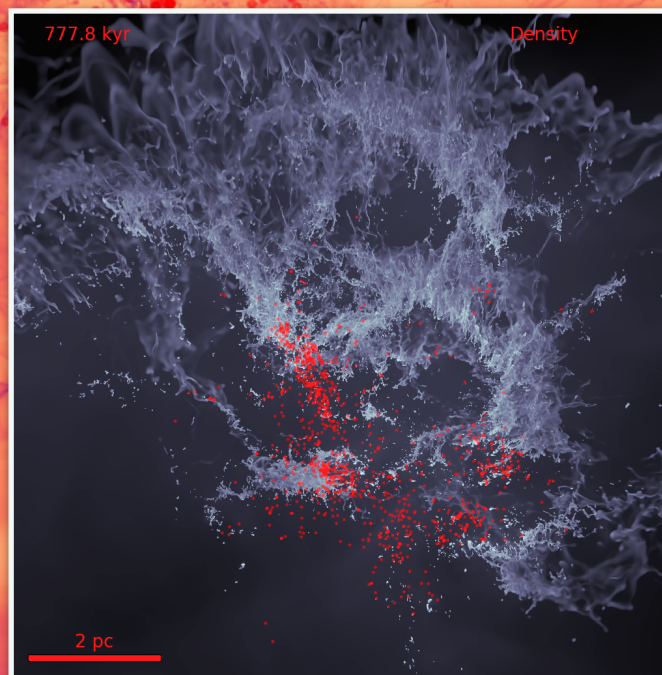
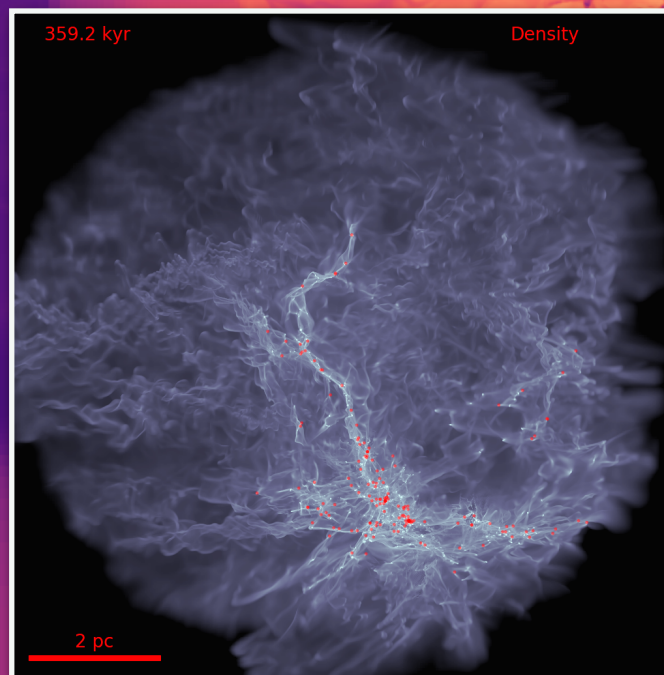
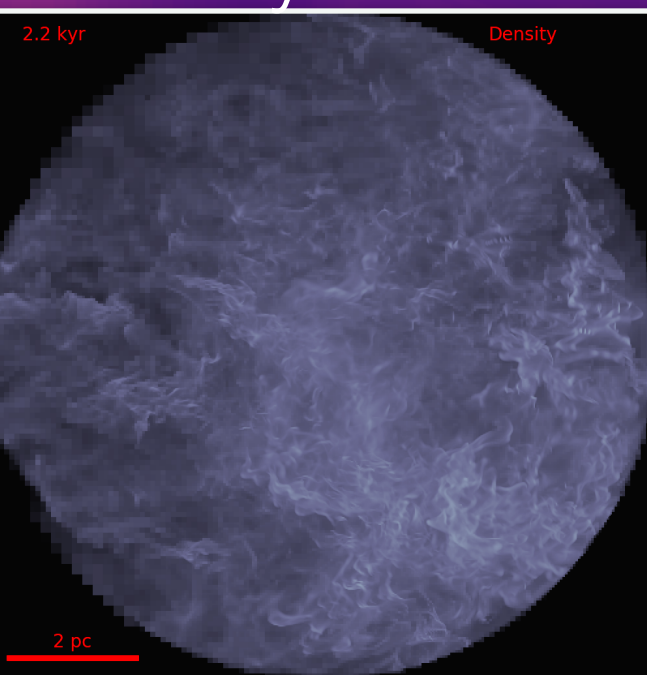
RAMSES (Teyssier02) + RHD (Rosdahl+13) =
(Magneto-)hydrodynamics solver with self-gravity on adaptive mesh+
propagation of photons and interaction with gas via photoionisation

SIMULATION SETUP

- Radiative hydrodynamic simulations of turbulent molecular cloud
- Mass $2.5 \times 10^4 M_{\text{SUN}}$, Radius 5 pc
- Sink particles implementation (Bleuler+15)
- UV feedback is modelled coupling every sink with a self-consistent photo-ionising luminosity function. 3 regimes: STRONG, WEAK, NO FB

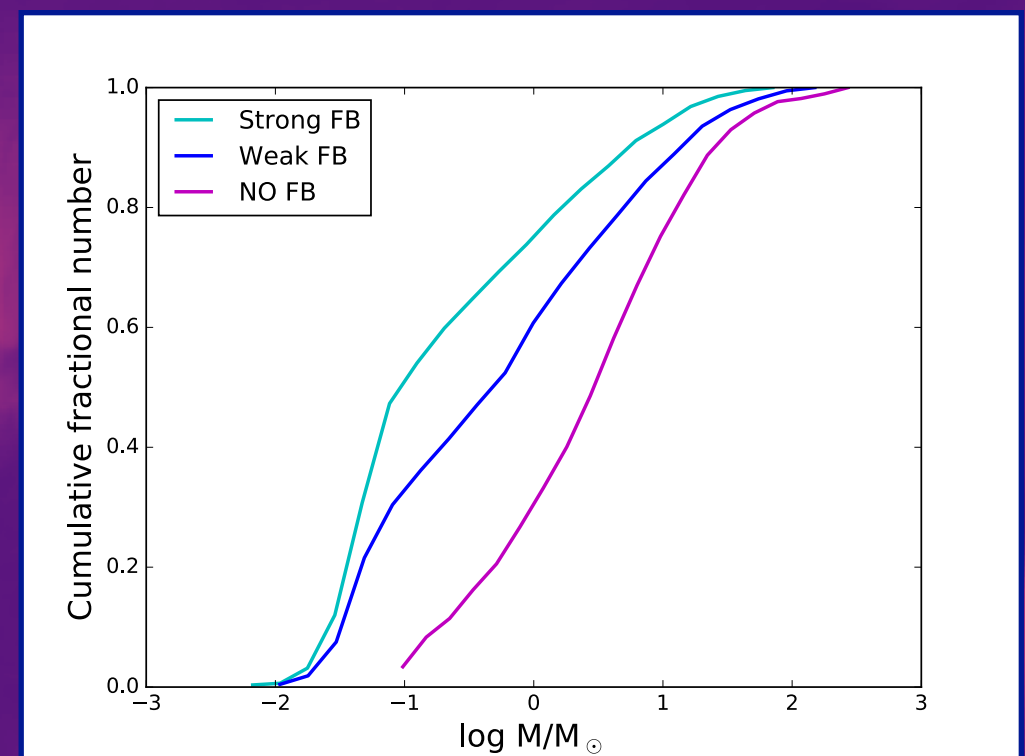
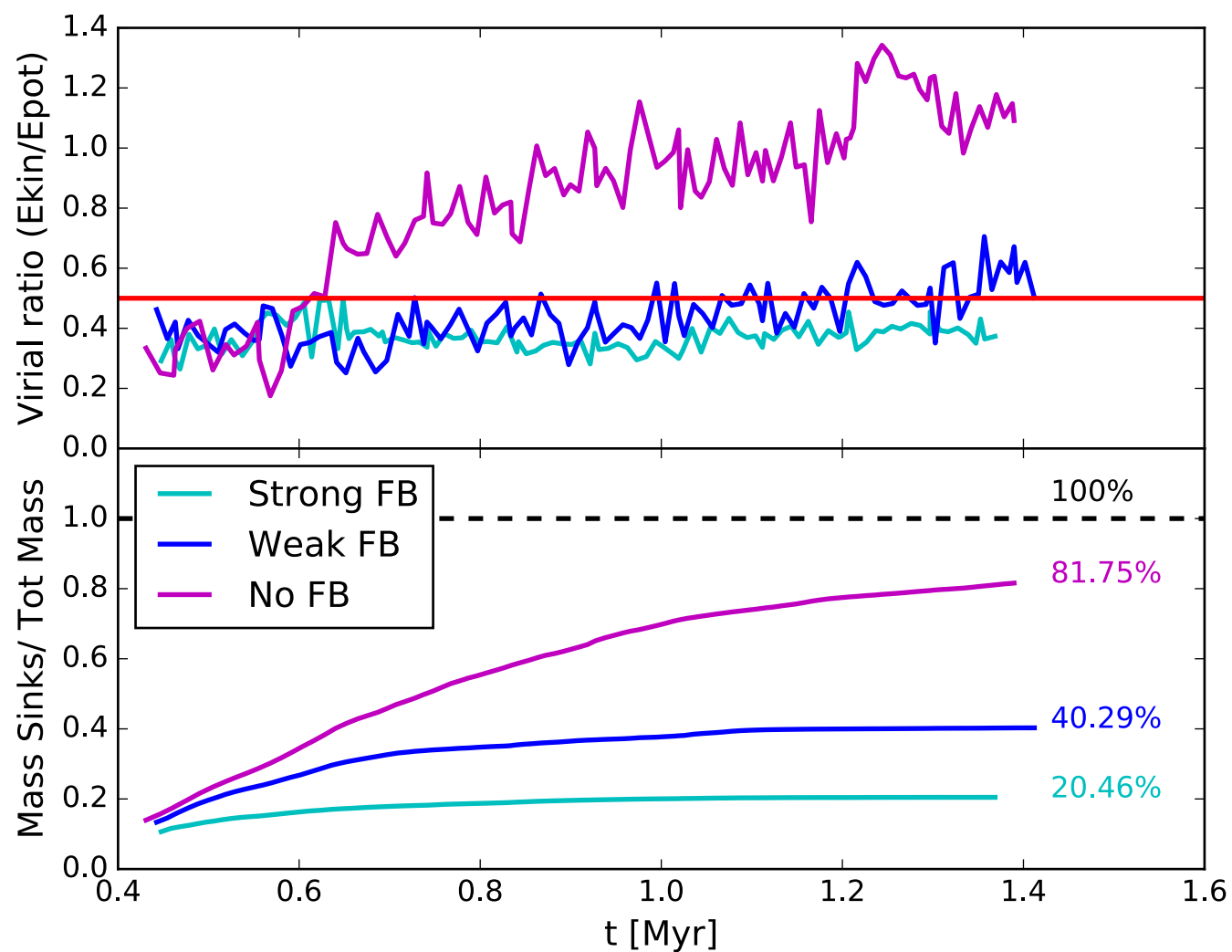
0 Myr

1.5 Myr

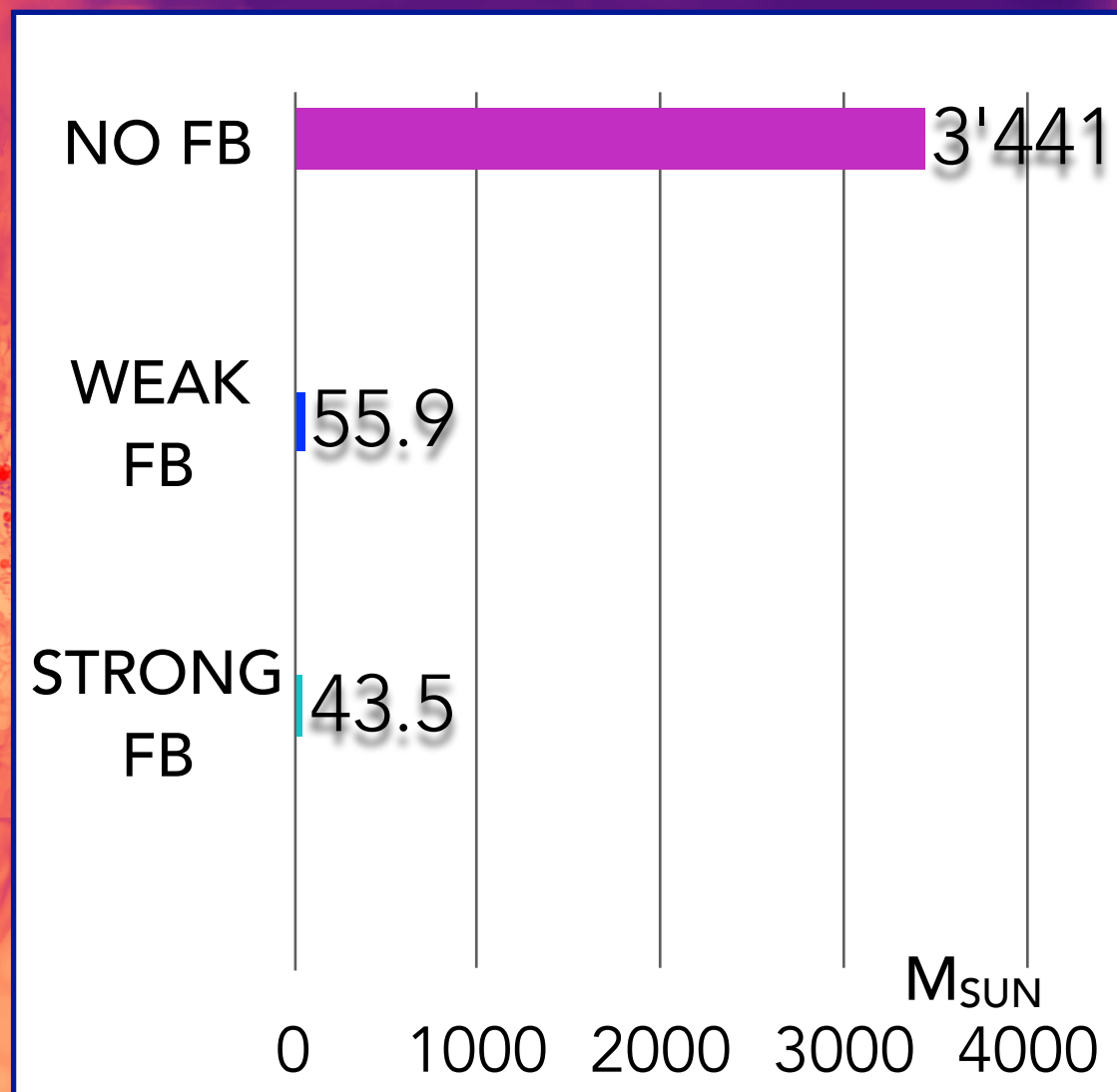


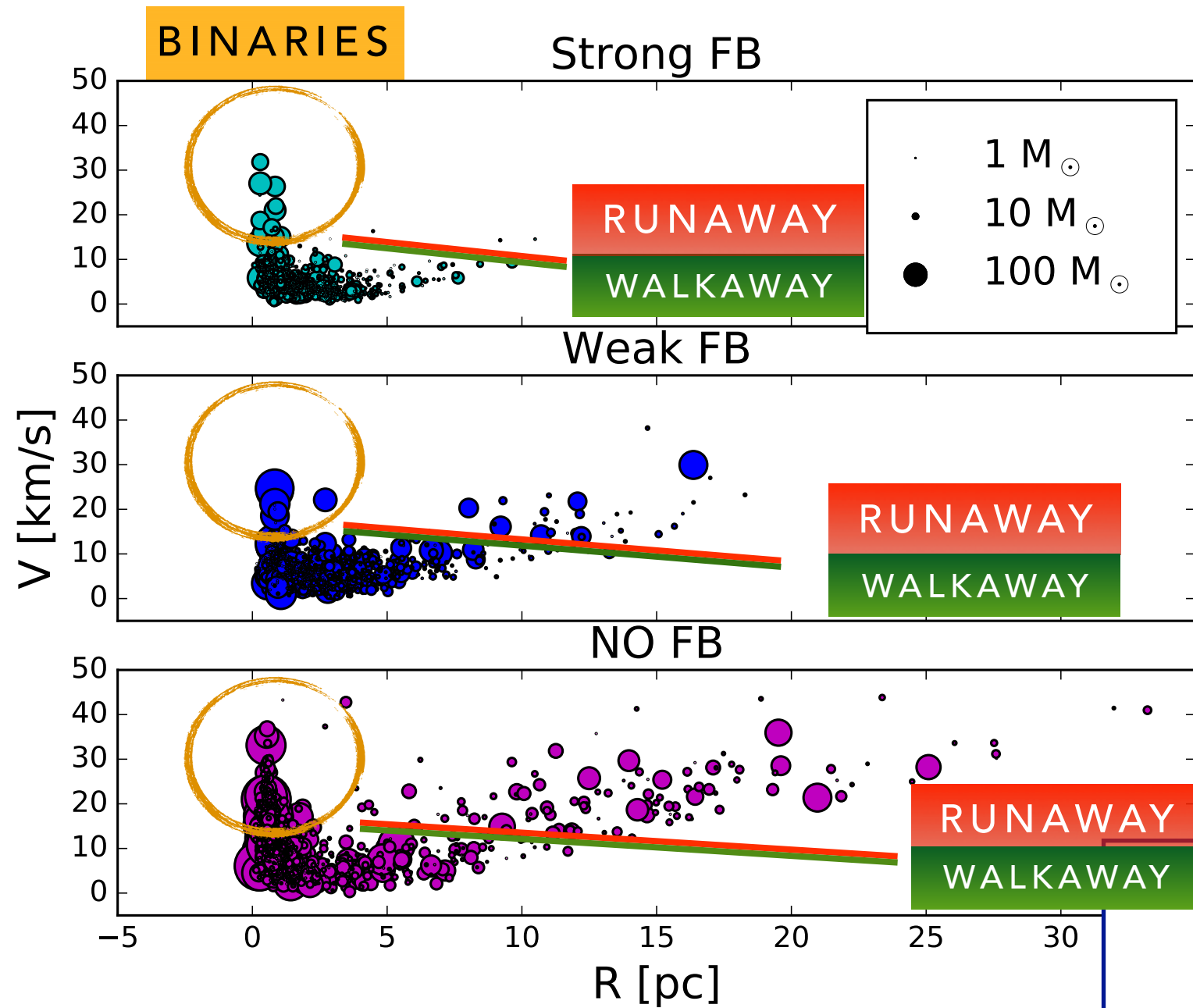
	STRONG	WEAK	NO FB
N SINKS	1425	1118	1153
MAX MASS [M_{SUN}]	115	247	410

Virial parameter & SFE



Gas not-expelled (<5pc)





Escapers

RUNAWAY stars: fast ejections within binary/multiple systems

WALKAWAY stars: slow ejections from relaxation interactions

Mass segregation

STRONG FB consistent with observations of mass segregation in YSCs (e.g. NGC 3603)

