

# **PROGENITORS OF TYPE I SLSNe and GRBs**

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## PROGENITORS OF TYPE I SLSNE & GRBS

#### SLSNe and GRBs have a lot in common!

- I. Endpoints of massive stars
- 2. Low metallicity environments
- 3. H and He free compact progenitors
- 4. Powered by a central engine
- 5. No well established progenitor mode

### CHEMICALLY HOMOGENEOUS EVOLUTION AT $8M_{\odot}$



(Models from Aguilera-Dena, Langer, Moriya & Schootemeijer 2018)

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#### MASS LOSS, CONTRACTION & ROTATION



$$\tau_{\mathrm{KH},\nu} = \frac{GM^2}{R(L+L_{\nu})}$$

#### NEUTRINO MEDIATED CONTRACTION+ FAST ROTATION= MASS LOSS & DENSE CSM

(Aguilera-Dena, Langer, Moriya & Schootemeijer 2018)

### TO BE, OR NOT TO BE (A MAGNETAR) . . .?



(Aguilera-Dena & Langer in prep.)

O'connor & Ott 2010, Ertl et al. 2016, Sukhbold & Woosley 2014, Ugliano et al. 2012, Muller et al. 2016 ...

#### **PERIODS AND EJECTA MASSES**



(Aguilera-Dena & Langer in prep., data from Nicholl et al. 2017)

### **MAGNETIC FIELDS**



(Nicholl et al. 2017, Aguilera-Dena & Langer in prep.)

#### CONCLUSION

Rotating stars in low metallicity environments might have different evolutionary channels

They could lead to energetic transients like magnetar driven SLSNe and GRBs

They will be powered by a central engine but also interact with their CSM