



CRYSTALLIZATION DYNAMOS

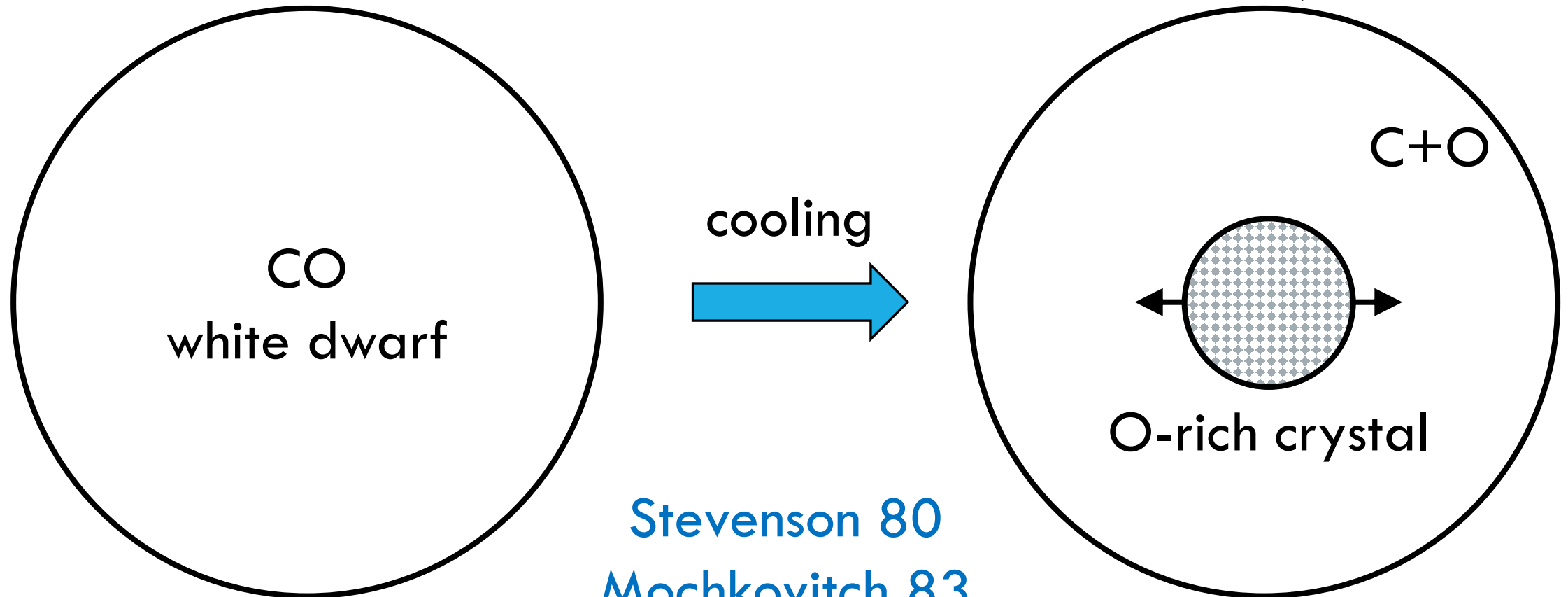
Sivan Ginzburg

Jim Fuller

Adela Kawka

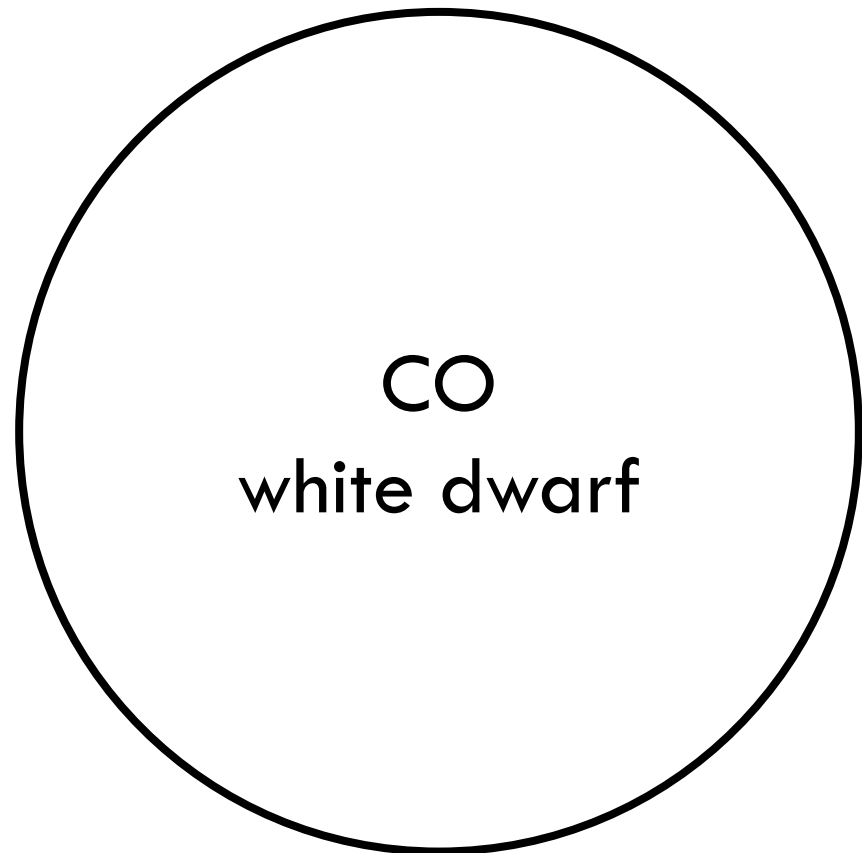
Ilaria Caiazzo

CRYSTALLIZATION \rightarrow CONVECTION



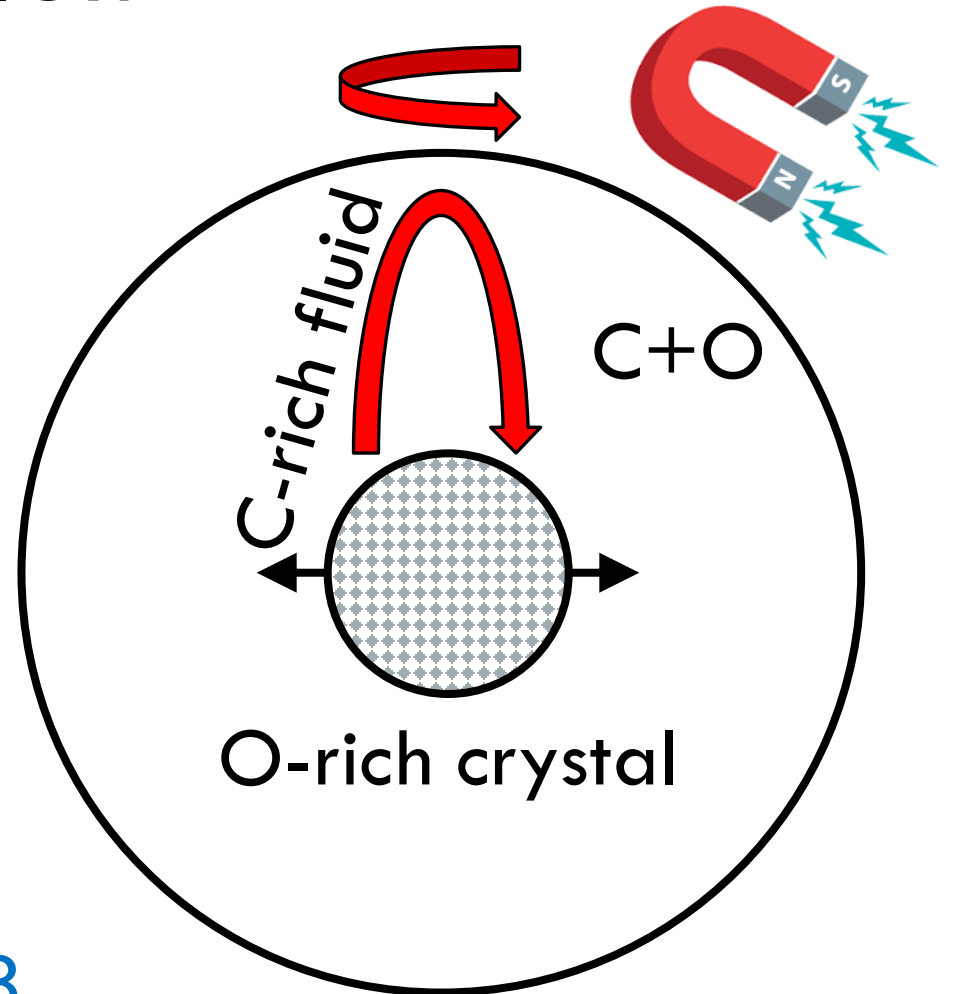
Stevenson 80
Mochkovitch 83

CRYSTALLIZATION → CONVECTION

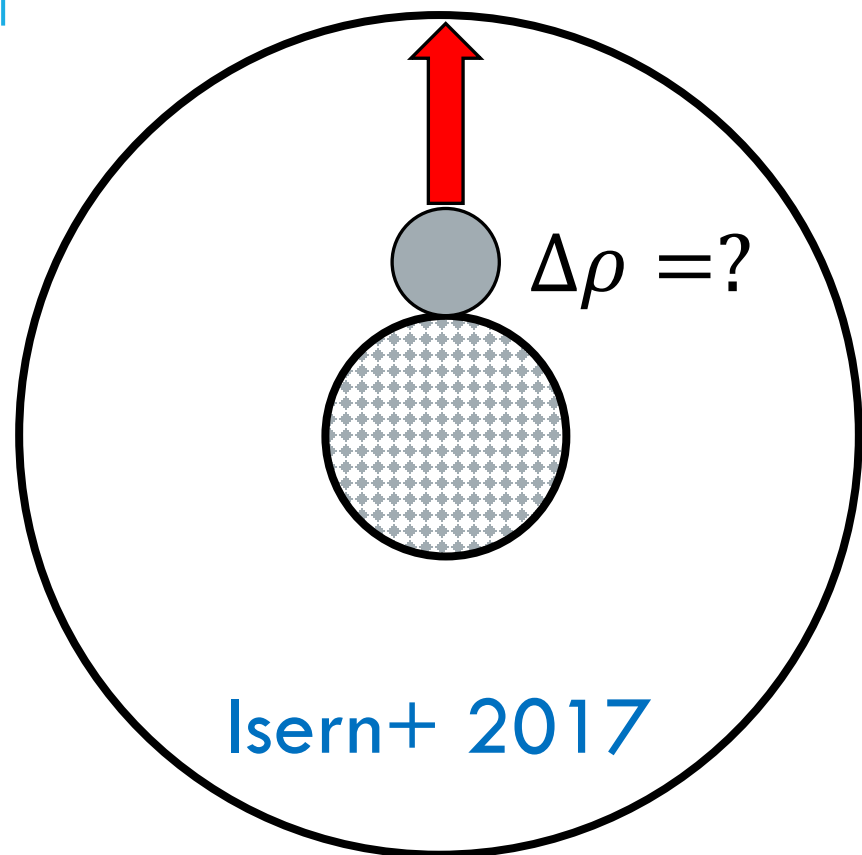


cooling
→

Stevenson 80
Mochkovitch 83



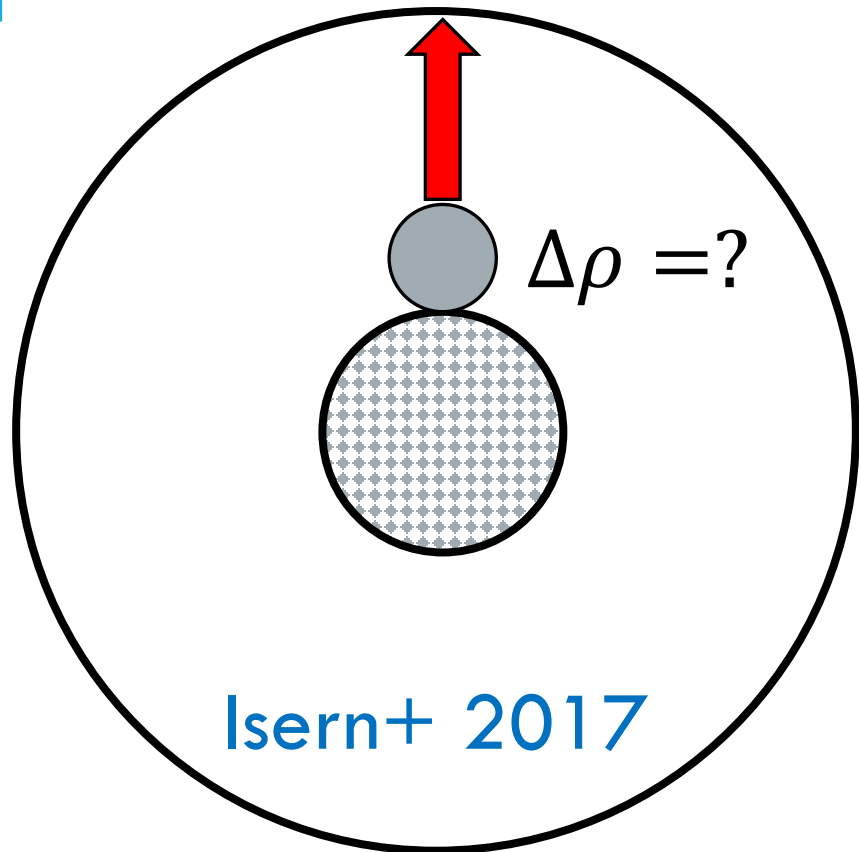
SLOWER CONVECTION



$$a = g \frac{\Delta\rho}{\rho}$$

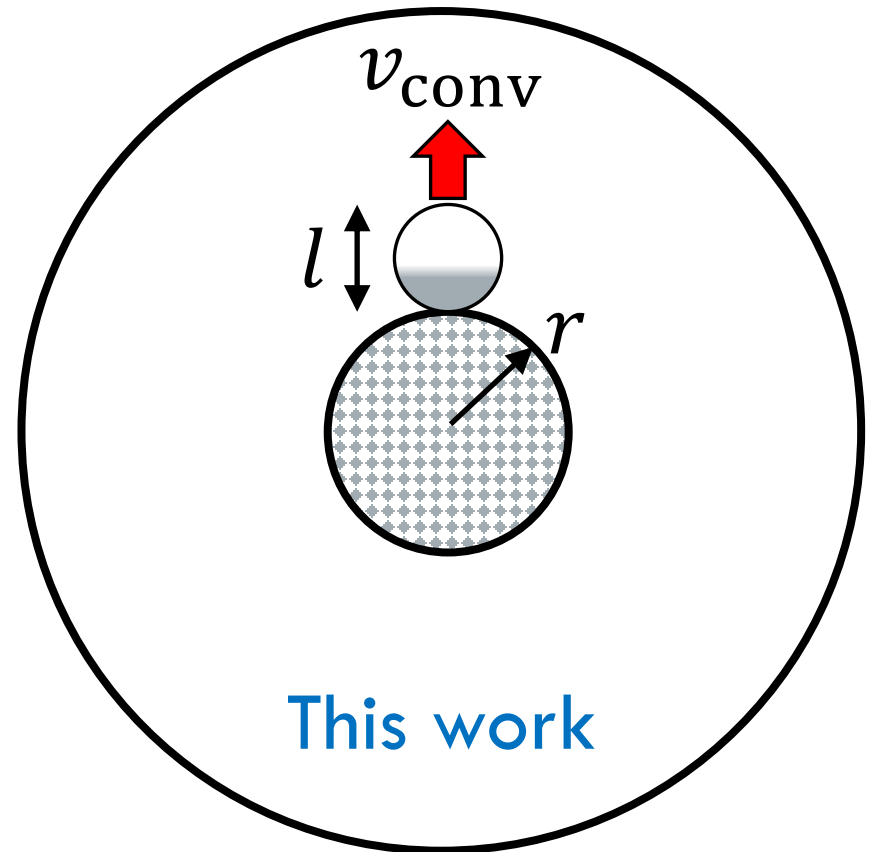
$$\frac{\Delta\rho}{\rho} = \frac{\Delta\rho_0}{\rho} \sim 10^{-3}$$

SLOWER CONVECTION



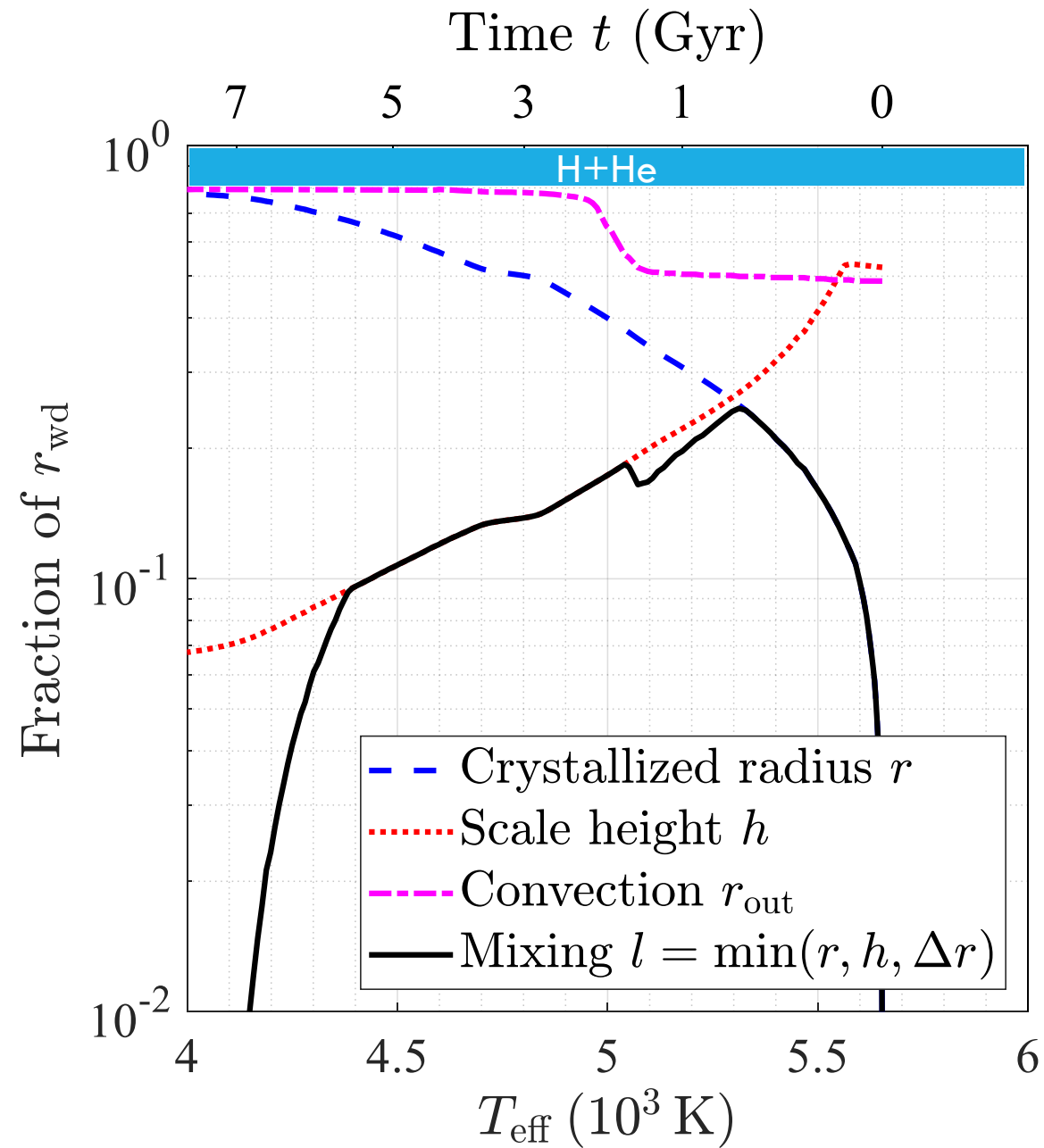
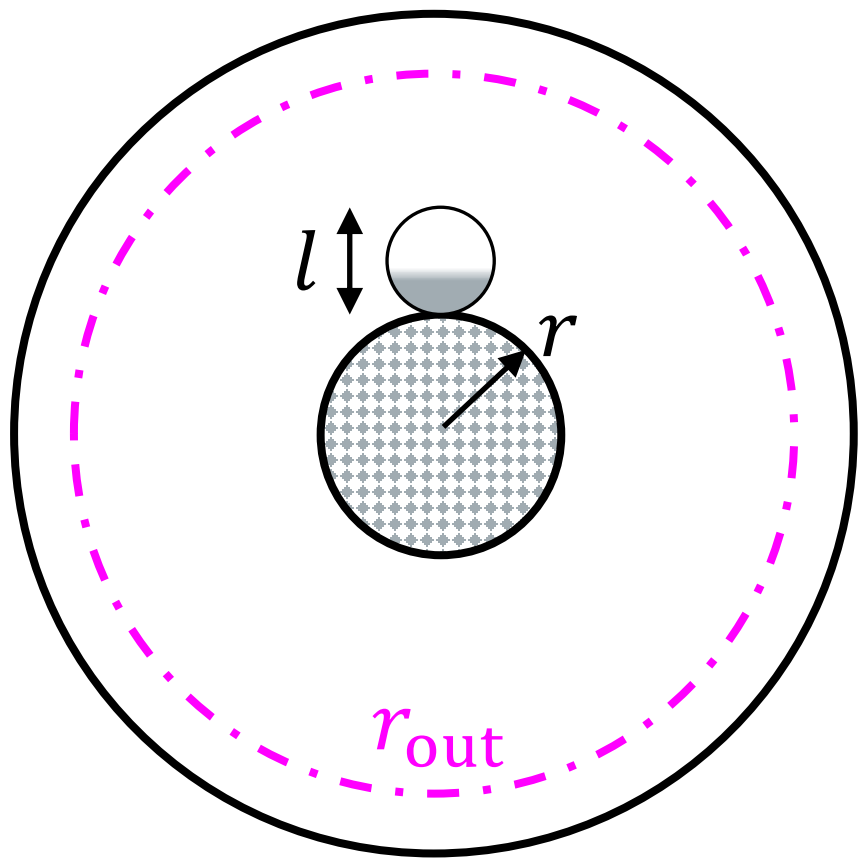
$$\frac{\Delta\rho}{\rho} = \frac{\Delta\rho_0}{\rho} \sim 10^{-3}$$

$$a = g \frac{\Delta\rho}{\rho}$$

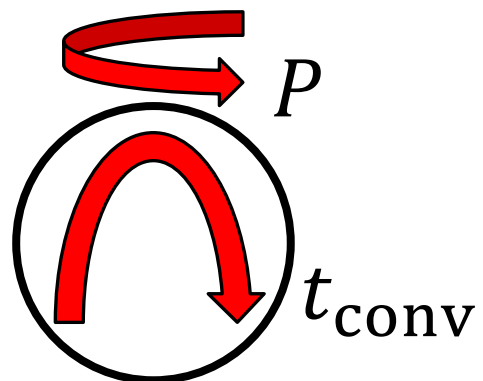


$$\frac{\Delta\rho}{\rho} = \frac{\Delta\rho_0}{\rho} \frac{\dot{r}}{v_{\text{conv}}}$$

MIXING LENGTH

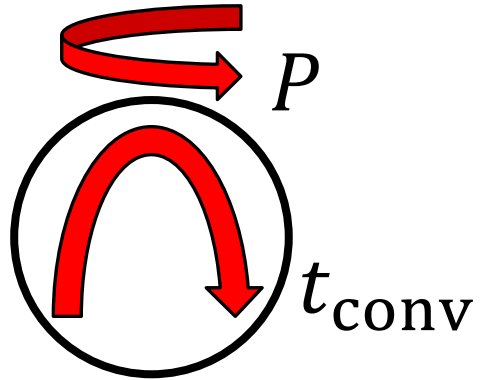


MAGNETIC FIELD





$$\frac{B^2}{8\pi} / \frac{1}{2} \rho v_{\text{conv}}^2$$

MAGNETIC FIELD



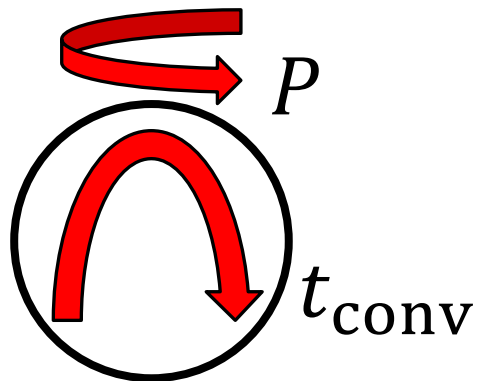
$$\frac{B^2}{8\pi} / \frac{1}{2} \rho v_{\text{conv}}^2$$

~ 1   $\sim \frac{t_{\text{conv}}}{P} \gg 1$

Christensen+09

Augustson+16,19

MAGNETIC FIELD

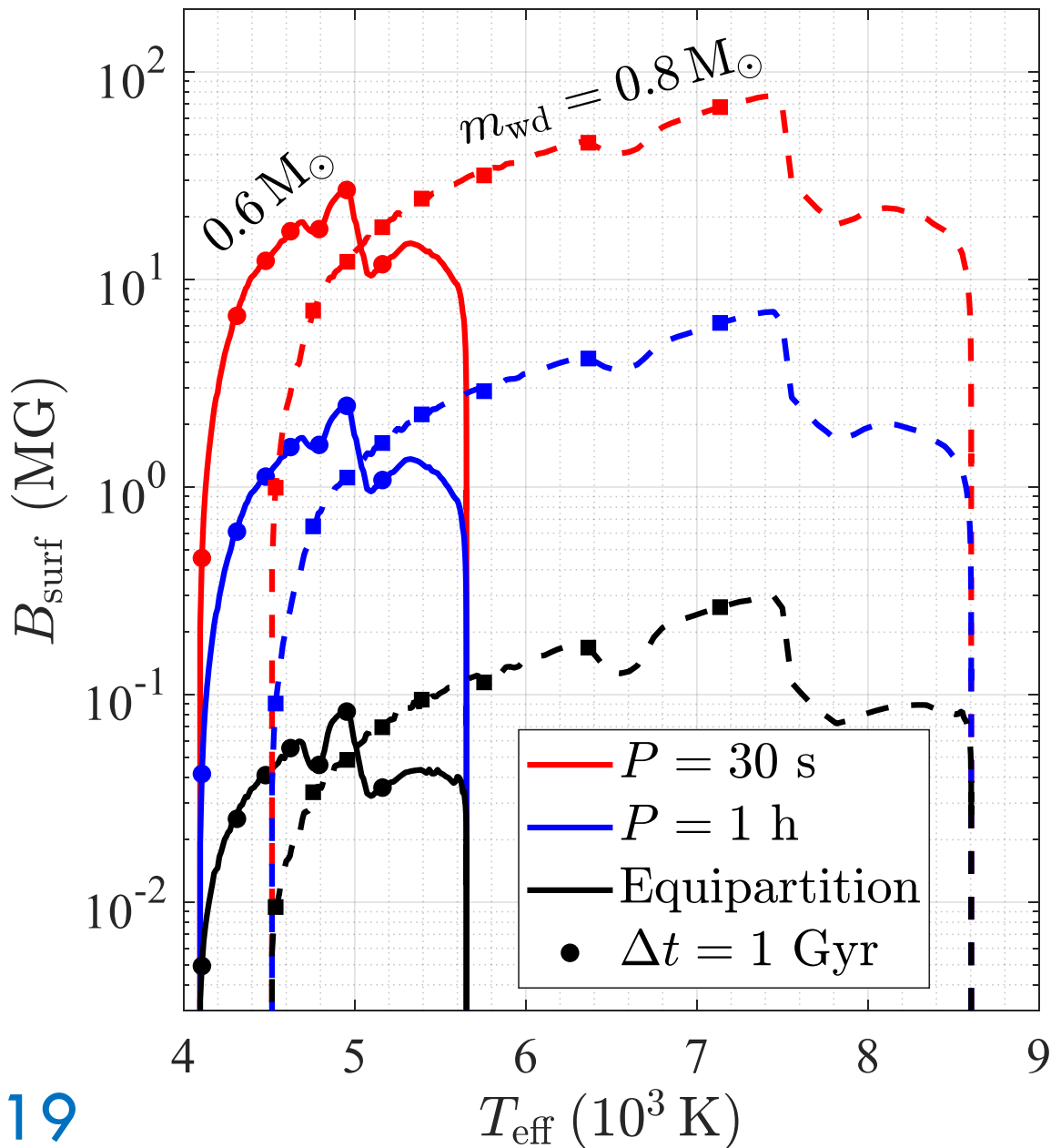


$$\frac{B^2}{8\pi} / \frac{1}{2} \rho v_{\text{conv}}^2$$

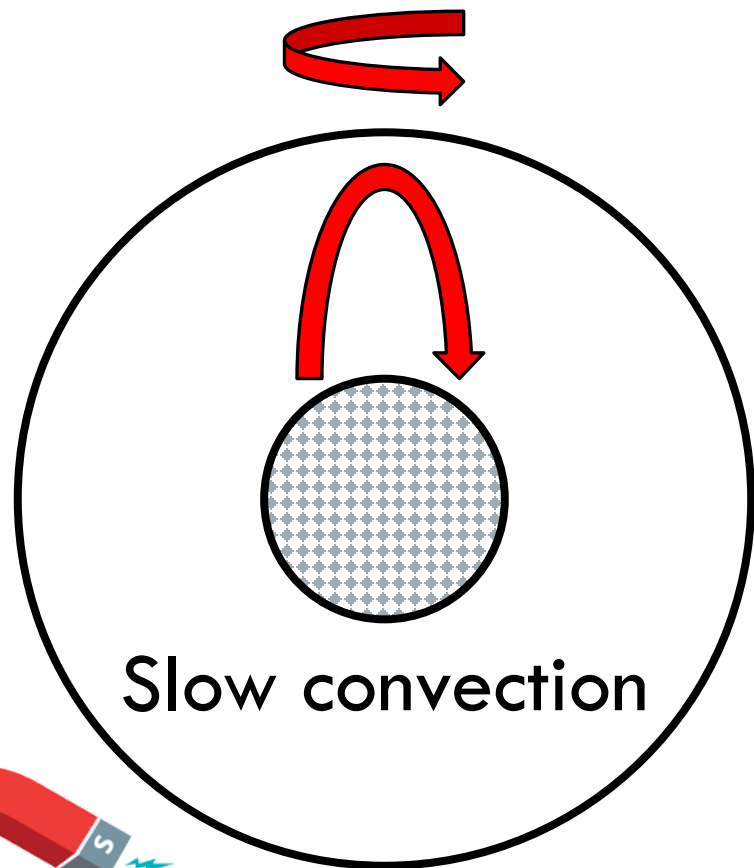
~ 1 $\sim \frac{t_{\text{conv}}}{P} \gg 1$

Christensen+09

Augustson+16,19



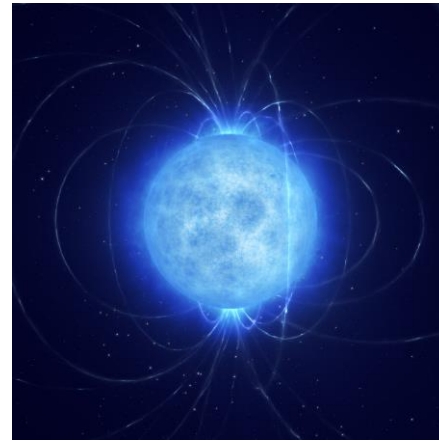
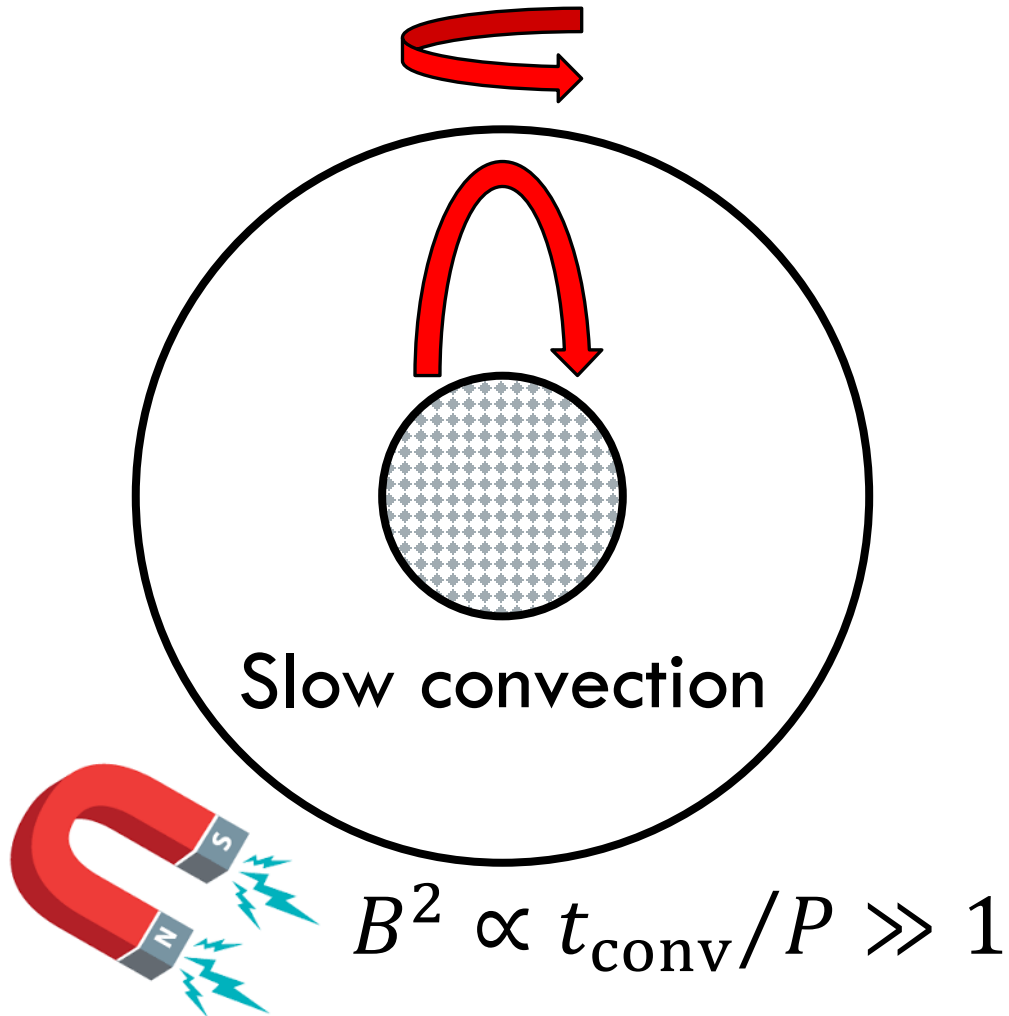
SUMMARY



Slow convection

$$B^2 \propto t_{\text{conv}}/P \gg 1$$

SUMMARY



Some single WD



All magnetic CVs?

Schreiber, Belloni, Gänsicke+ 2021

Belloni+ 2021 Camisassa+ 2022

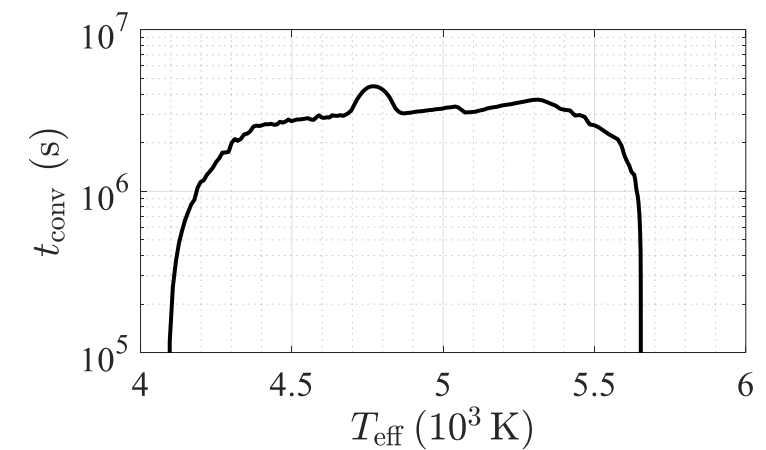
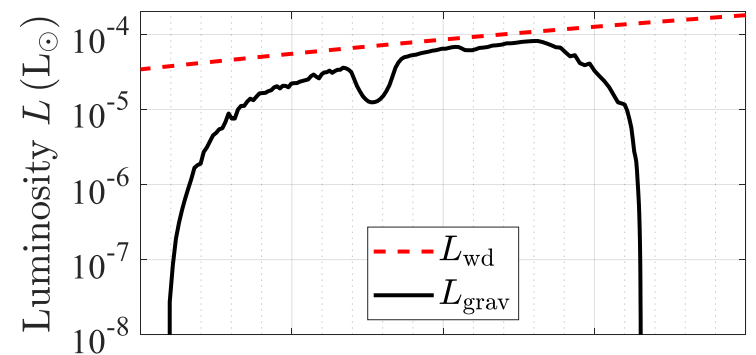
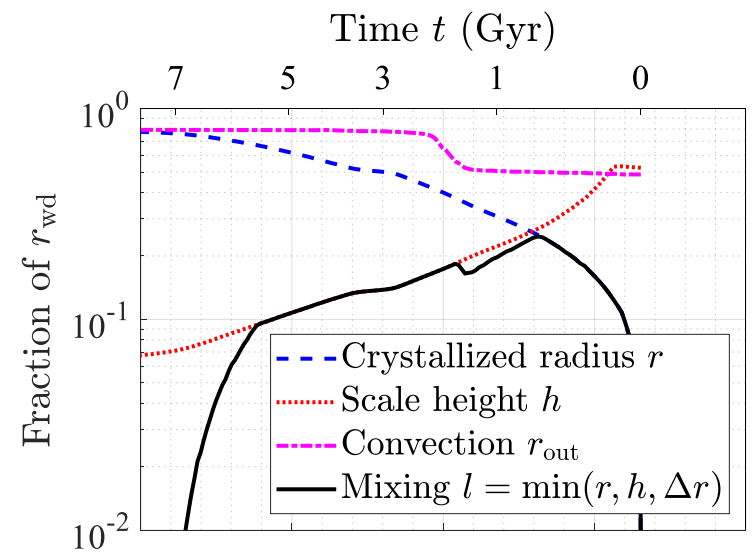
Schreiber, Belloni, Zorotovic+ 2022

Bagnulo & Landstreet 2022

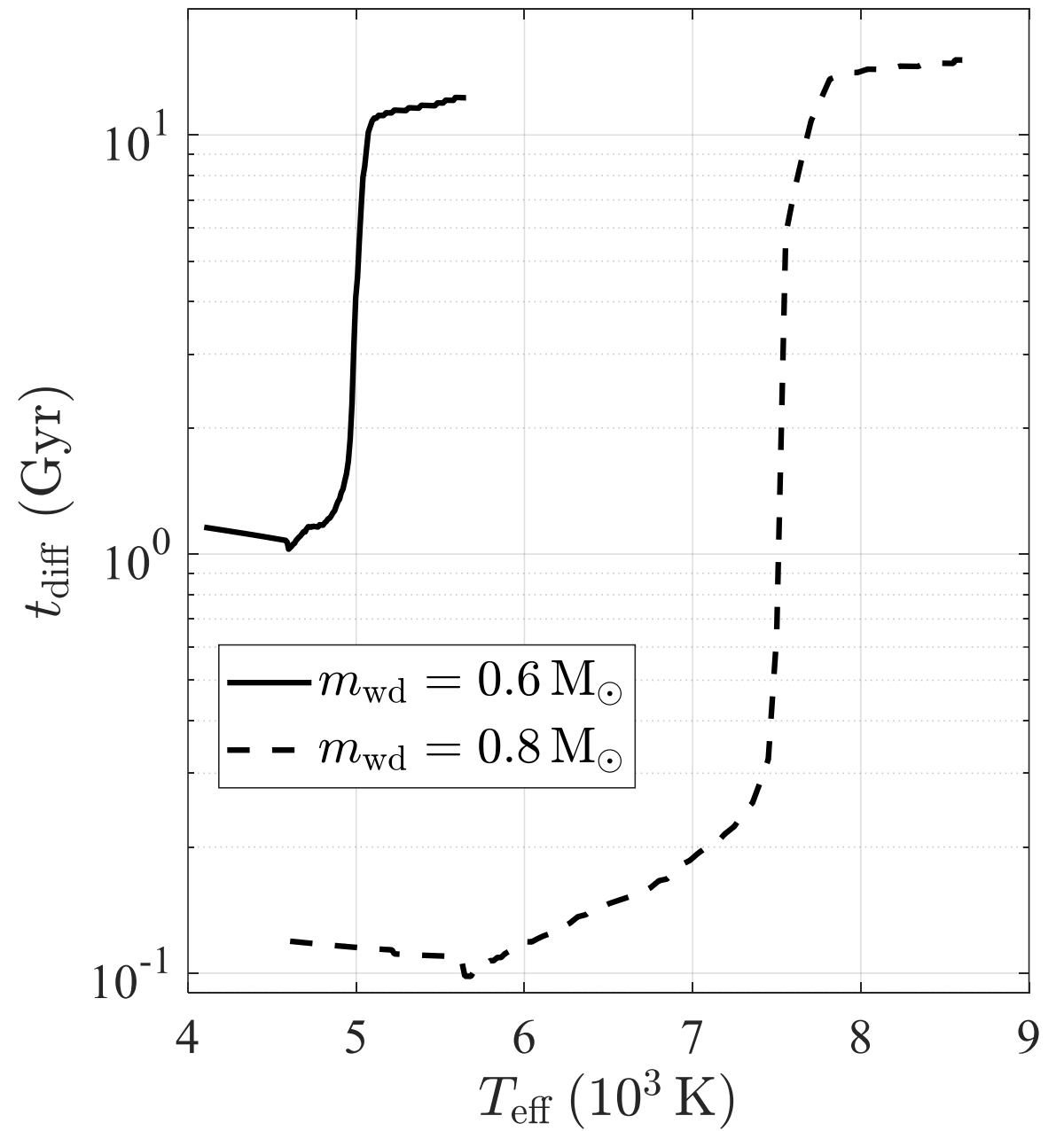
THANK YOU!



CONVECTION



DIFFUSION TIME



OUTER EDGE

