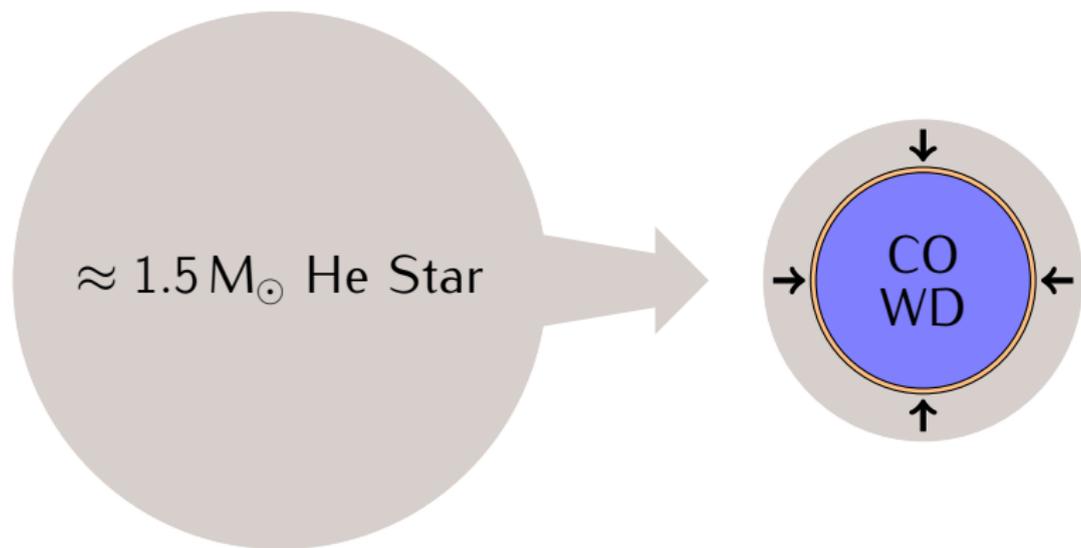


Helium star donors to thermonuclear supernovae

Sunny Wong & Josiah Schwab

26 June 2019

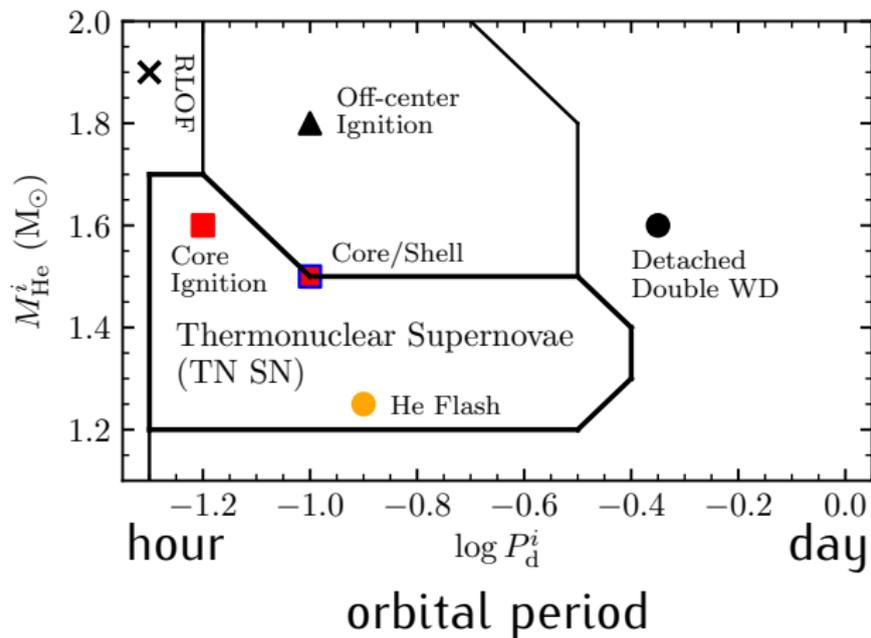
Close He star + WD binaries can grow a CO WD to the Chandrasekhar mass with a short delay time.



Orbital period \sim hours

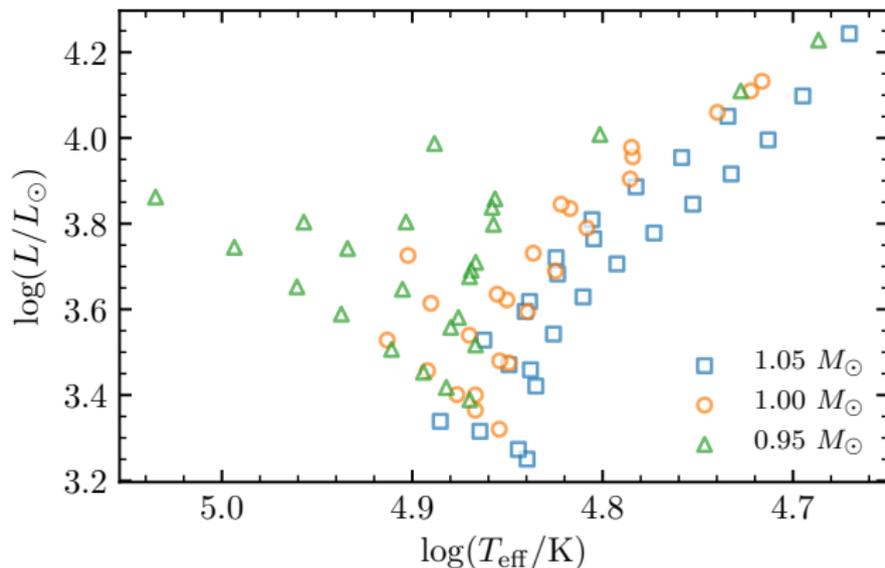
e.g., Yoon & Langer (2003); Claeys et al. (2014)

Binary evolution calculations identify which systems can lead to thermonuclear supernovae.

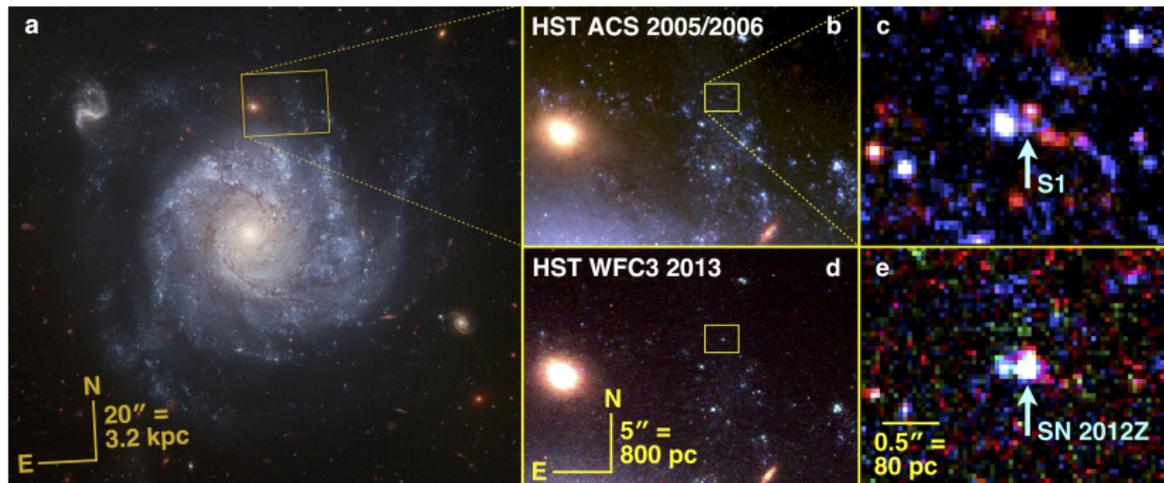


Wong & JS (2019); see also Wang et al. (2009, 2017)

These models can be extended to predict the pre-explosion colors of the progenitor systems.



A bright blue source was observed in pre-explosion imaging of the galaxy hosting the SN Iax 2012Z.



McCully et al. (2014)

- ▶ Need ~ 100 short-period sdO+WD systems in the Milky Way to make all Iax SNe with this thermal-timescale He mass transfer channel.

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Liu et al. (2010); Liu et al. (2015)

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- ▶ BPS has trouble making binaries like that; we have trouble getting those systems to explode. What's going on here?