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Leftover Hydrogen in Stripped Massive Stars

Avishai Gilkis

Collaborators: Jorick Vink (Armagh), JJ Eldridge (Auckland), Chris Tout (Cambridge)

Classification/taxonomy of SNe

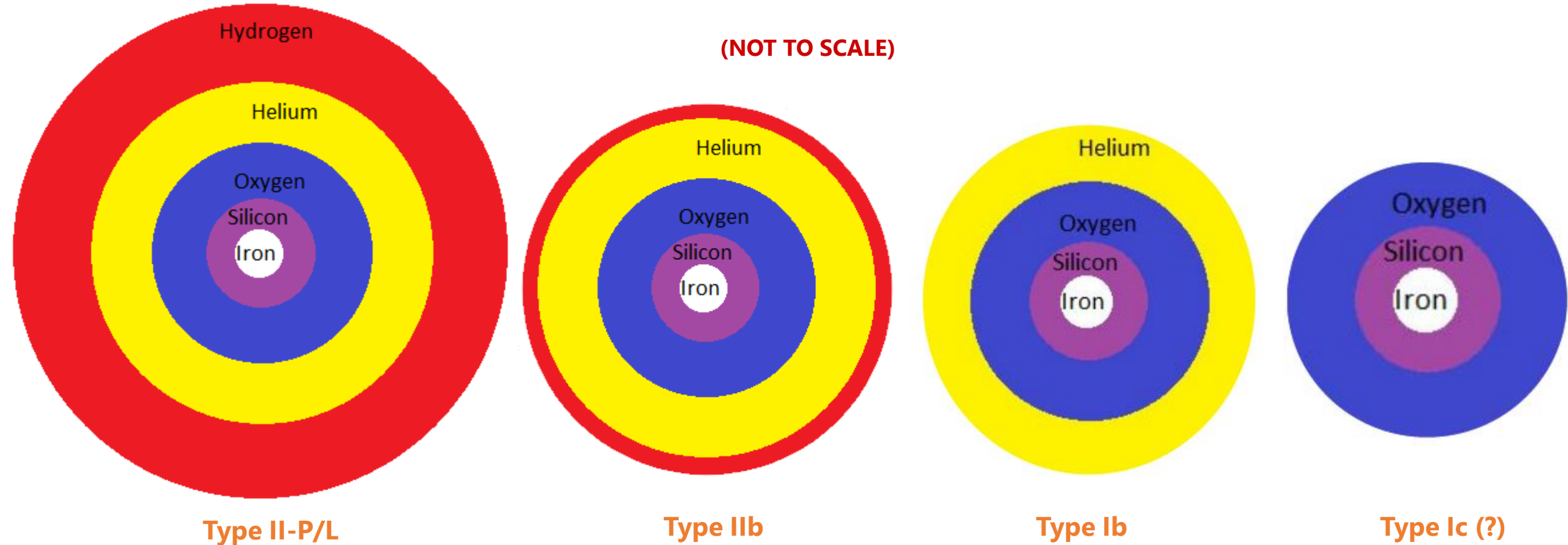
Type I - no H	Ia - Si		
	Ib/c - no Si	Ib - He	
		Ic - no He	
Type II - H	II-P/L/n	II-P/L - no narrow lines	II-P - plateau
		II-L - linear decline	
		II-n - narrow lines	
	IIb - transition to Ib		

Classification/taxonomy of SNe

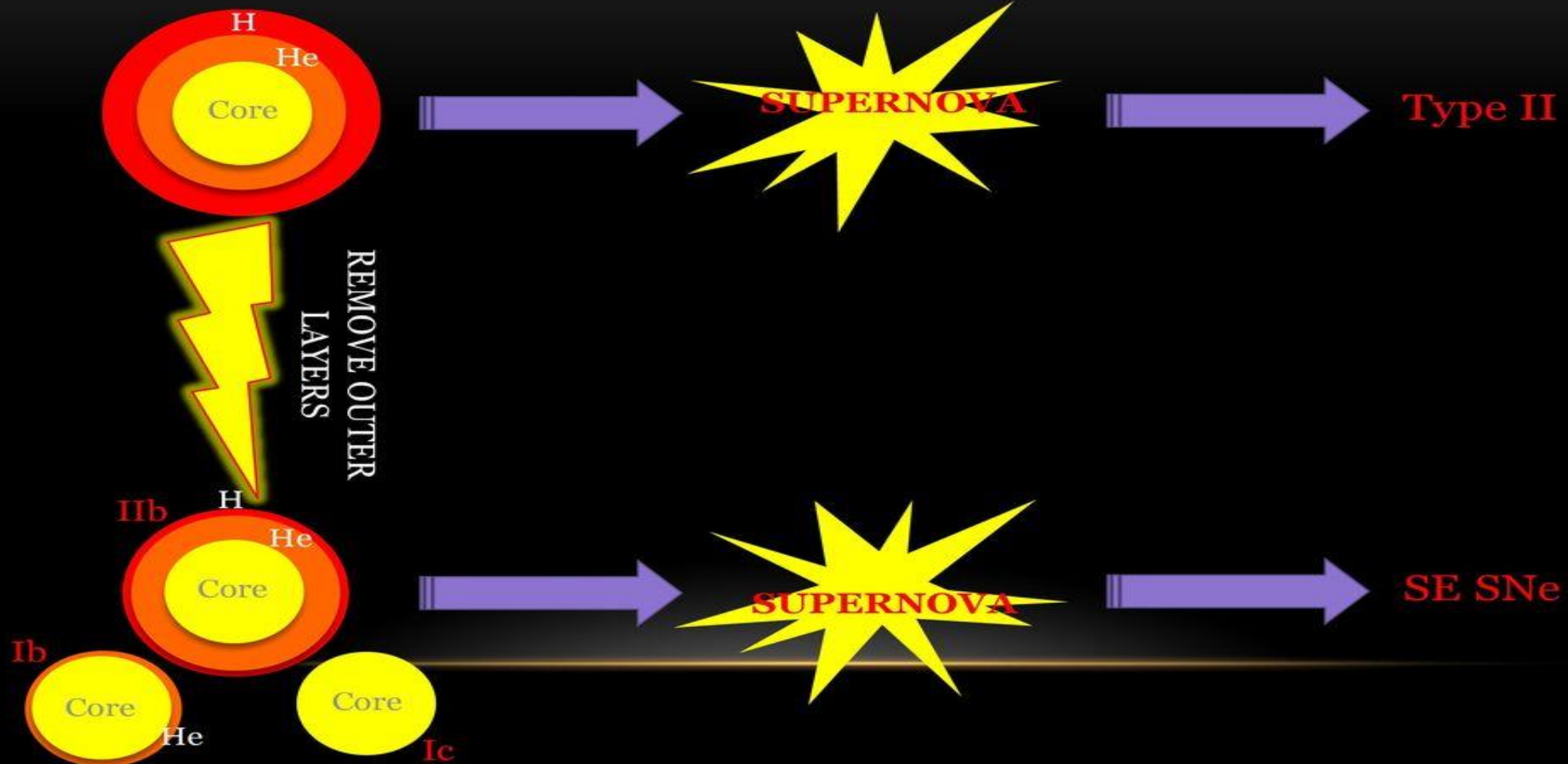
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Diversity of core-collapse supernovae (CCSNe)

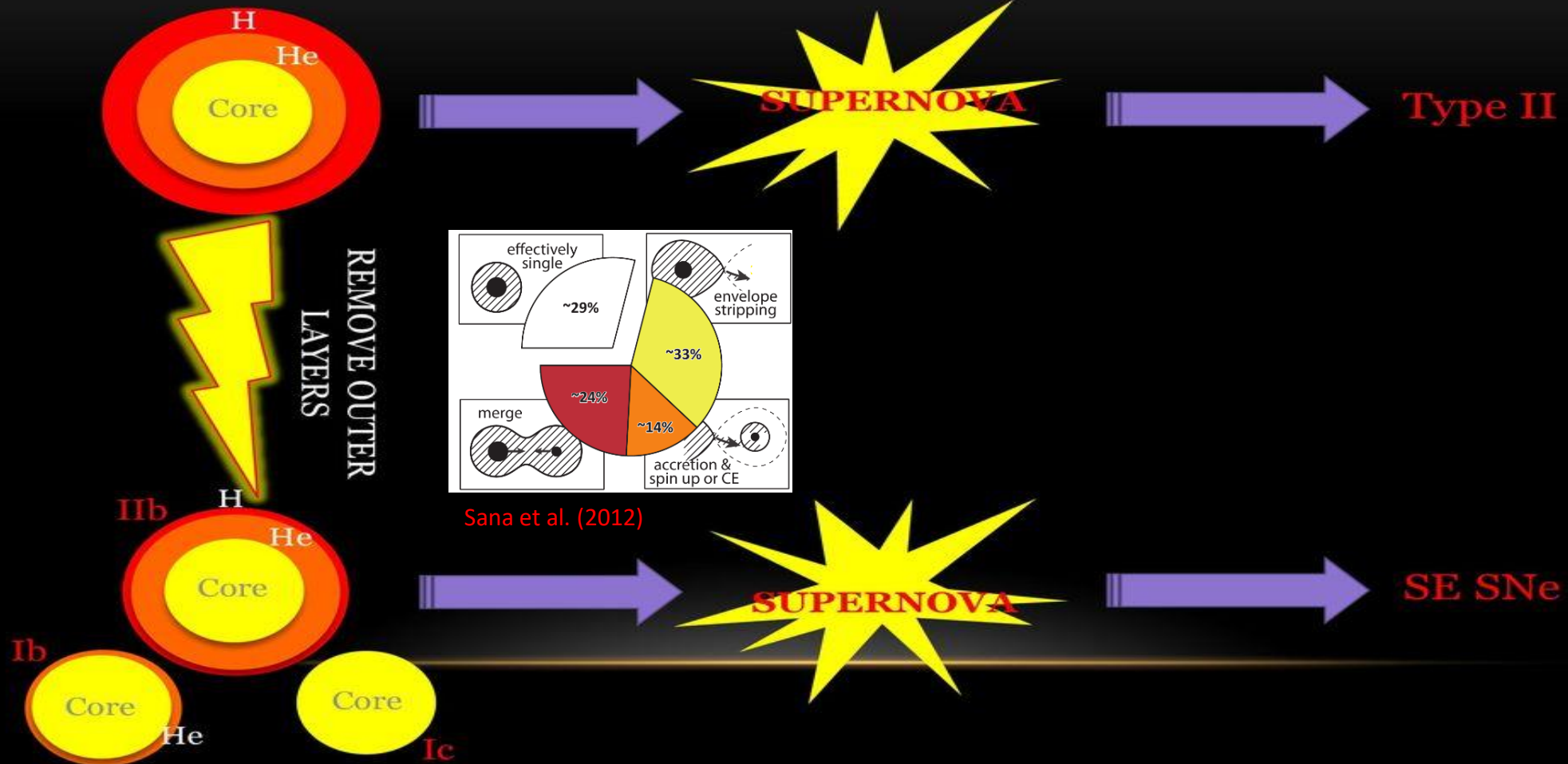
(NOT TO SCALE)



STRIPPED ENVELOPE SUPERNOVAE (SNe)



STRIPPED ENVELOPE SUPERNOVAE (SNe)



Talk Outline

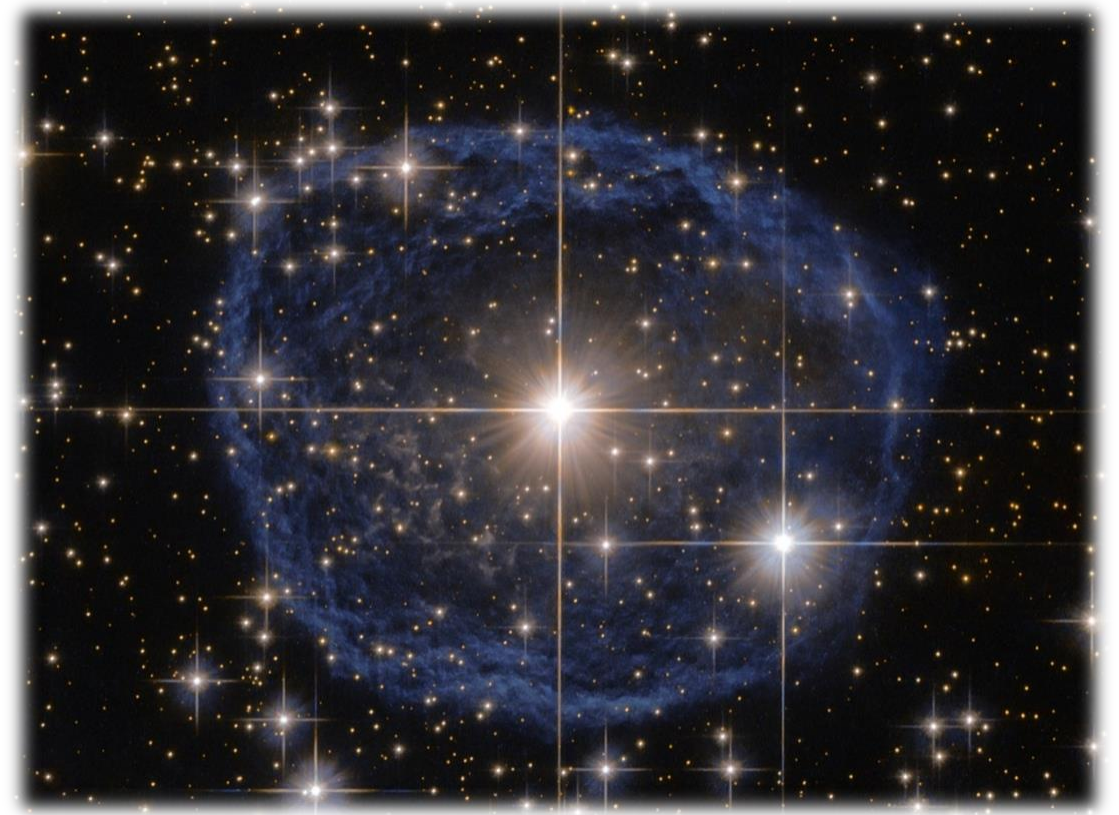
- 1) The mass-loss rate assumption
- 2) Metallicity effects

MESA

- Additions/changes - **Gilkis**, Vink, Eldridge & Tout (MNRAS, 2019)
 - Mass transfer efficiency
 - Accretion + mixing
 - Winds

MESA

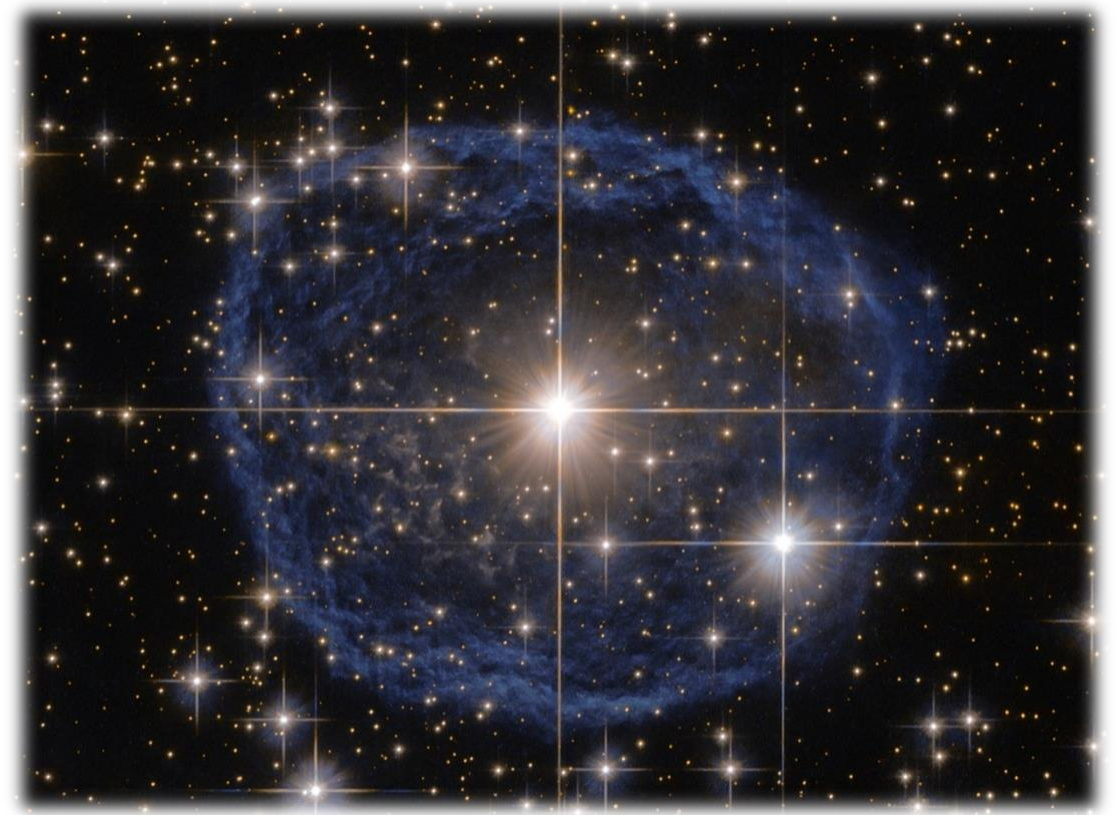
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Credit: ESA/Hubble & NASA; Acknowledgement: Judy Schmidt

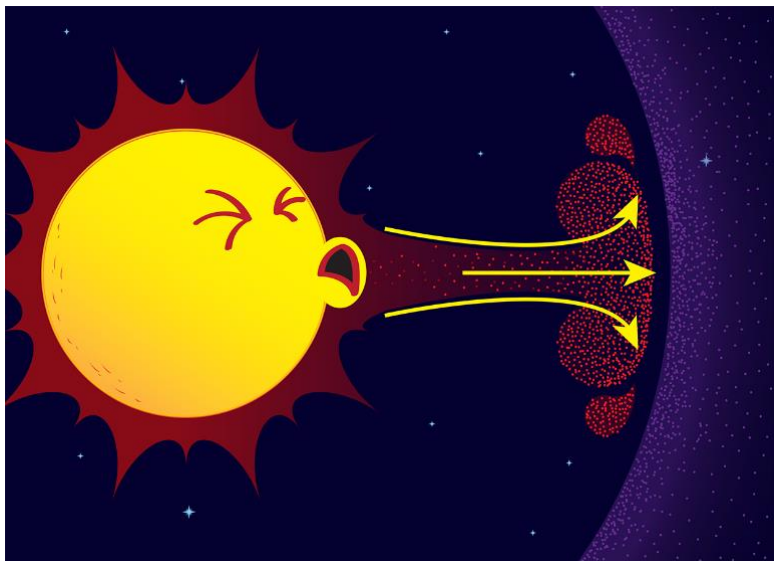
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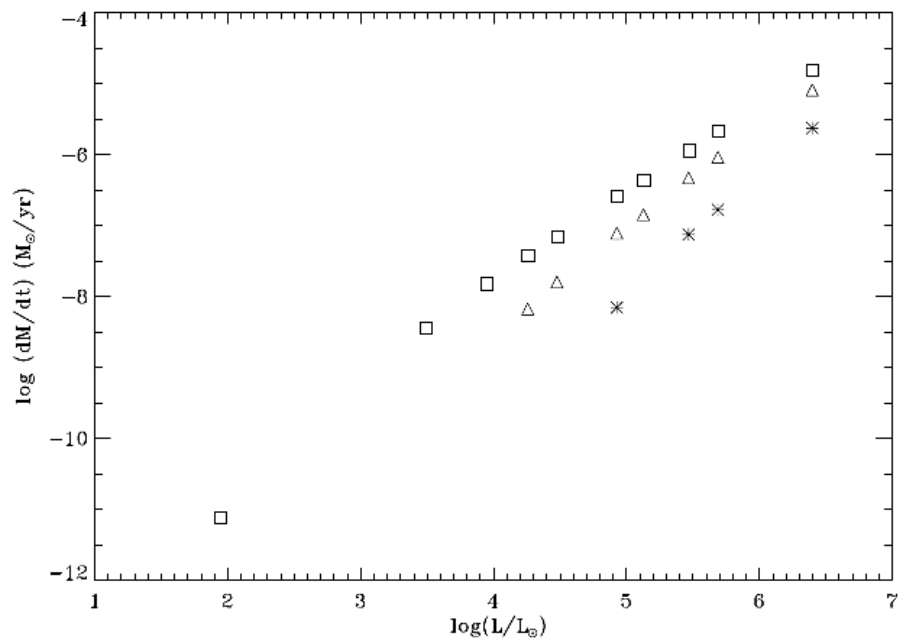


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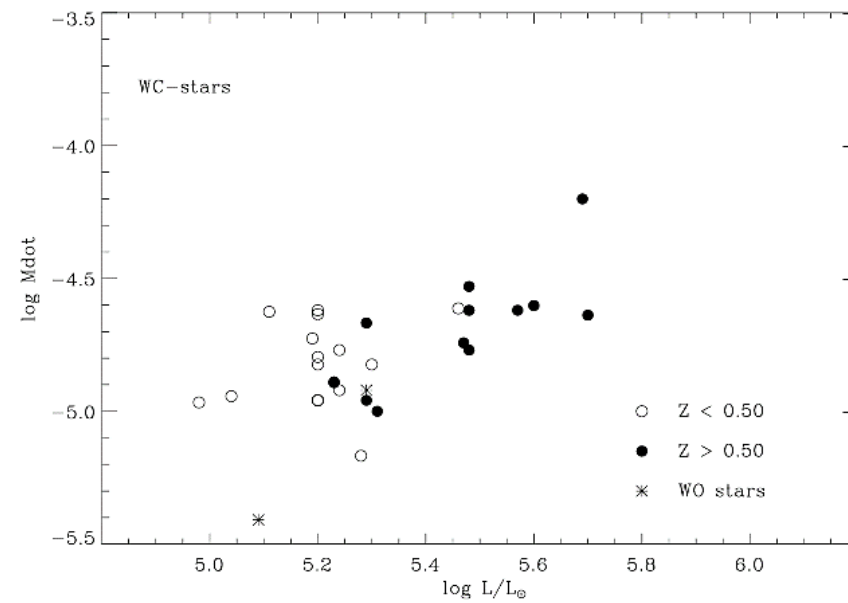
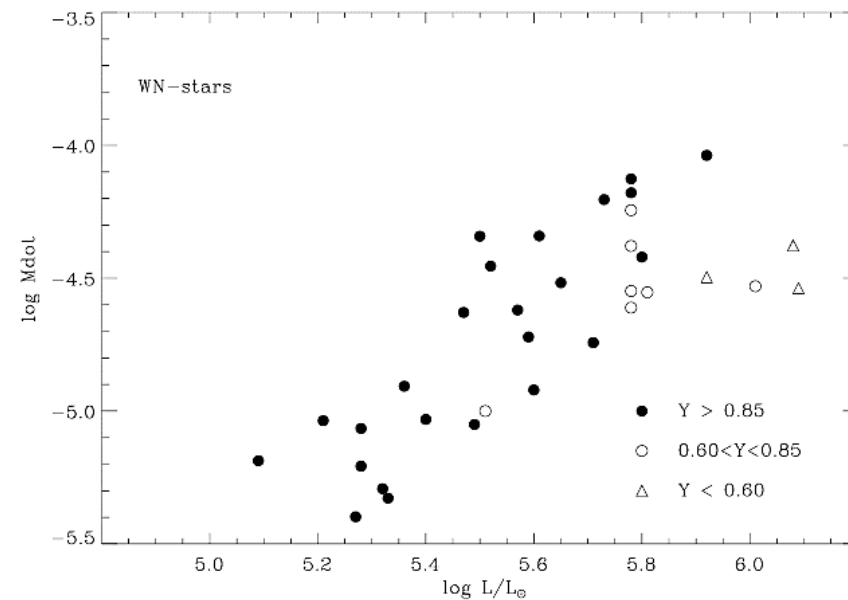
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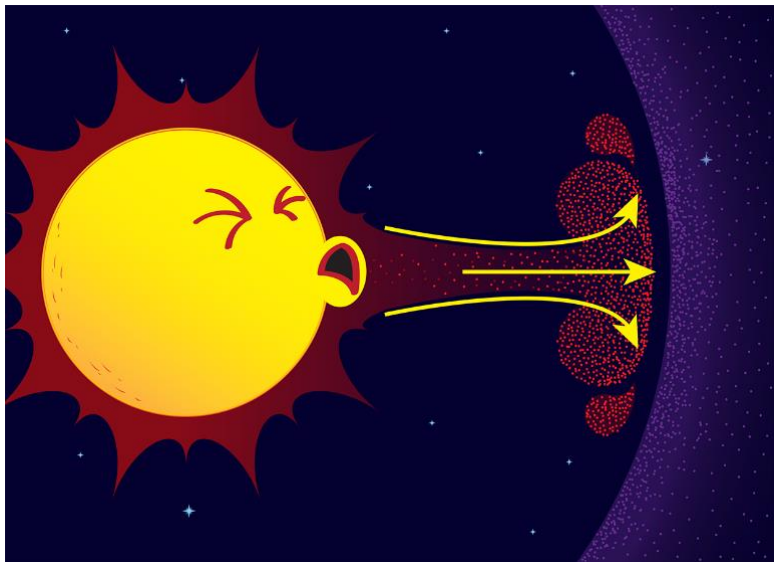
Vink (2017)



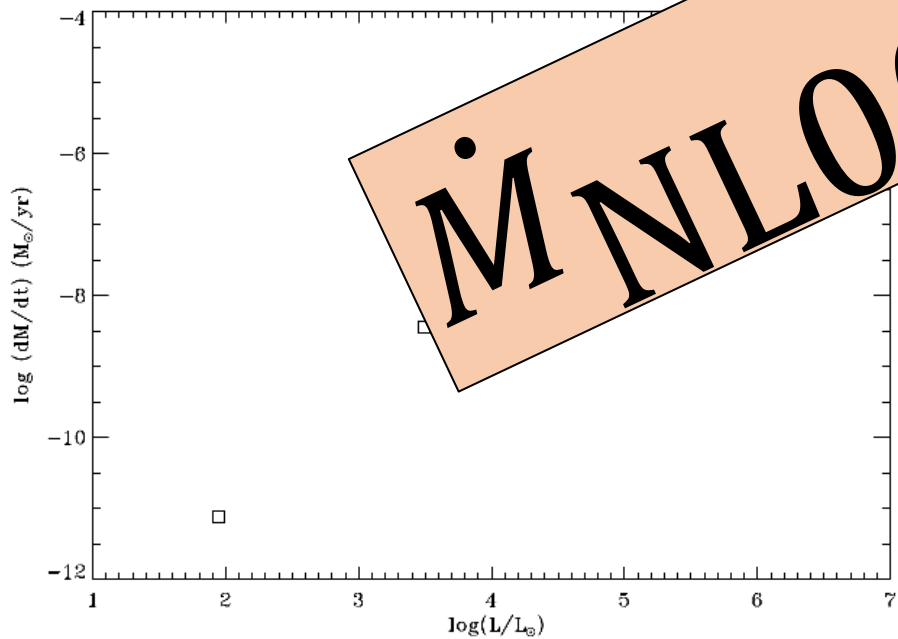
Nugis & Lamers (2000)



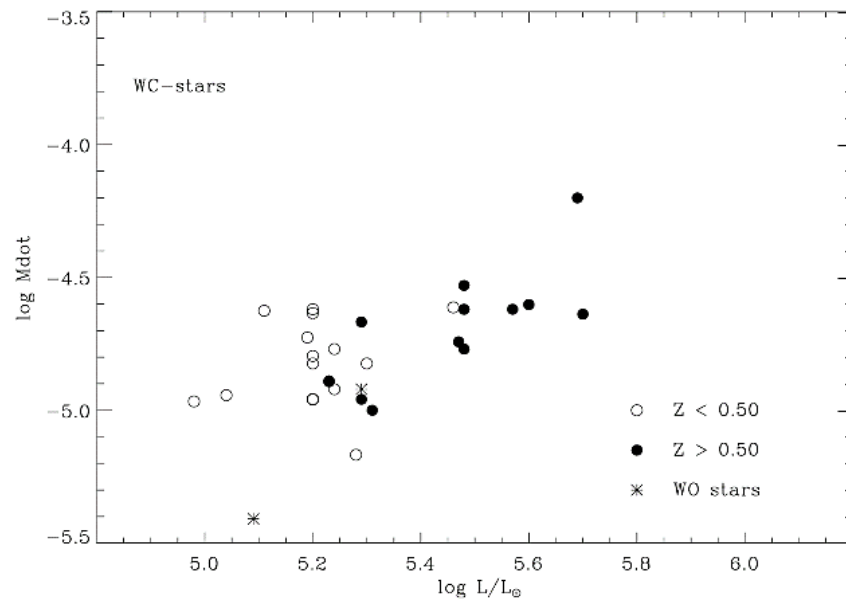
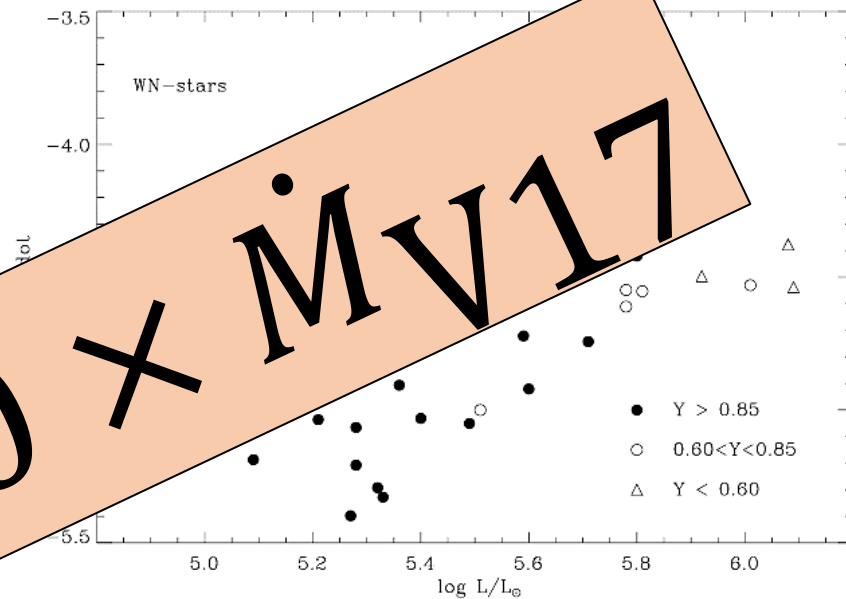
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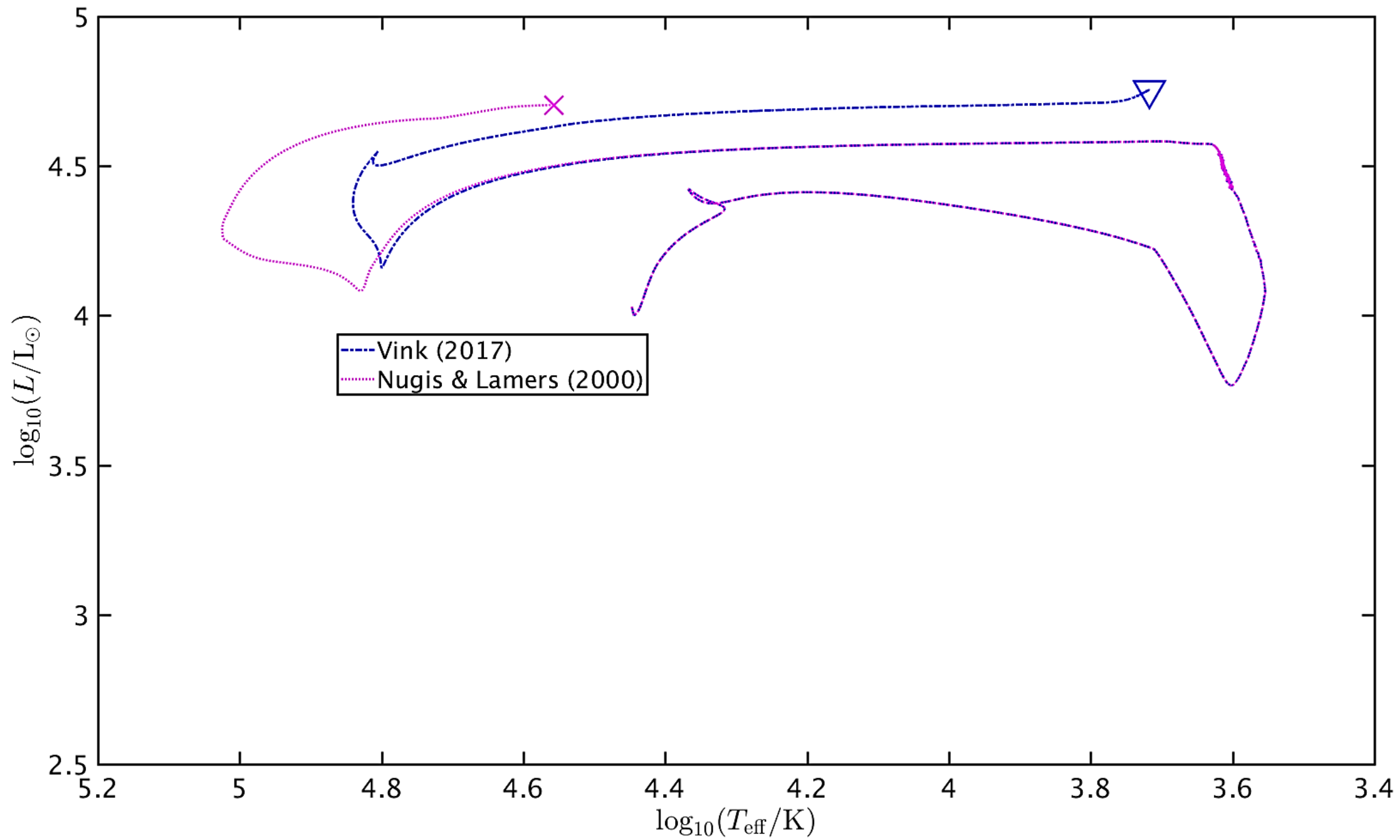


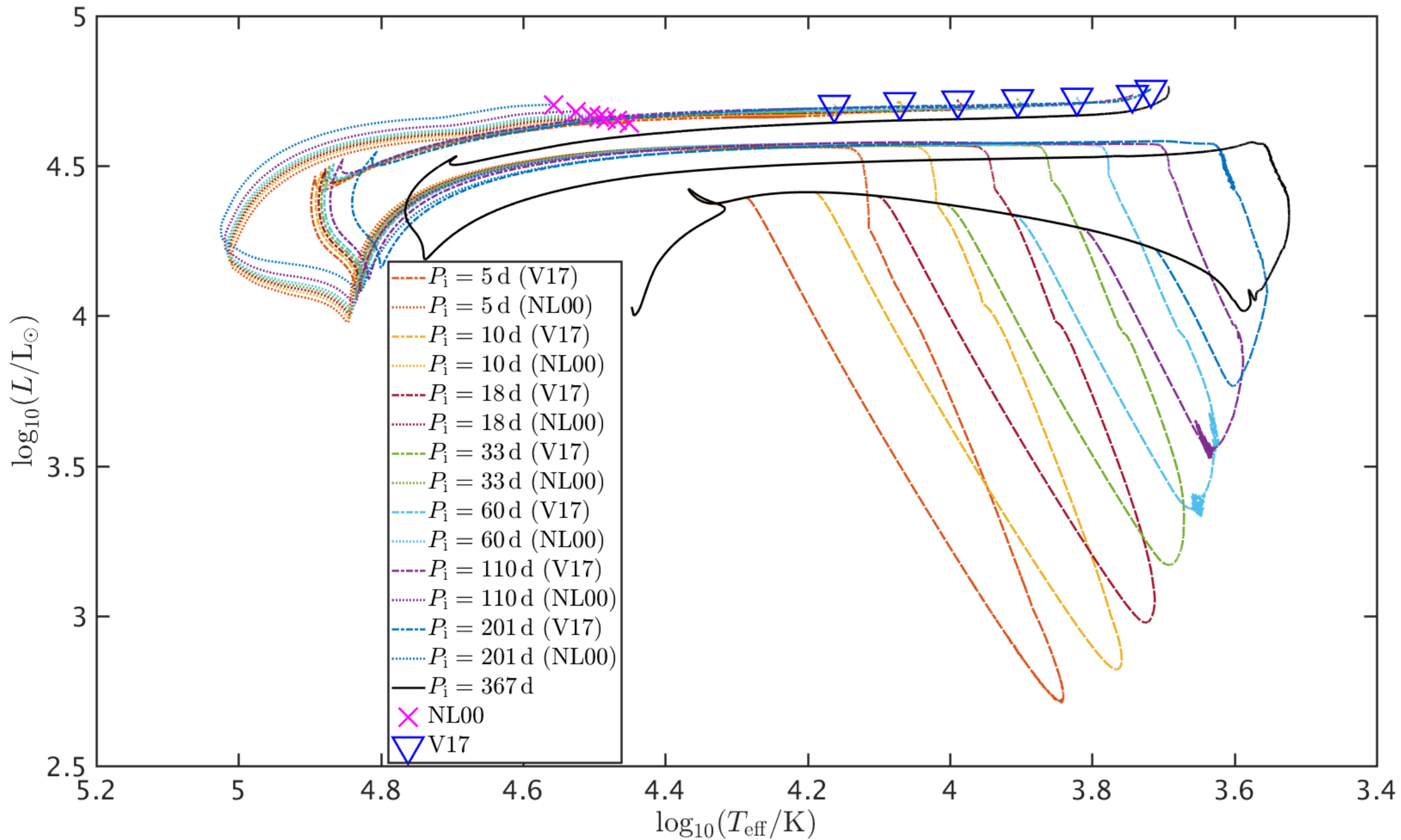
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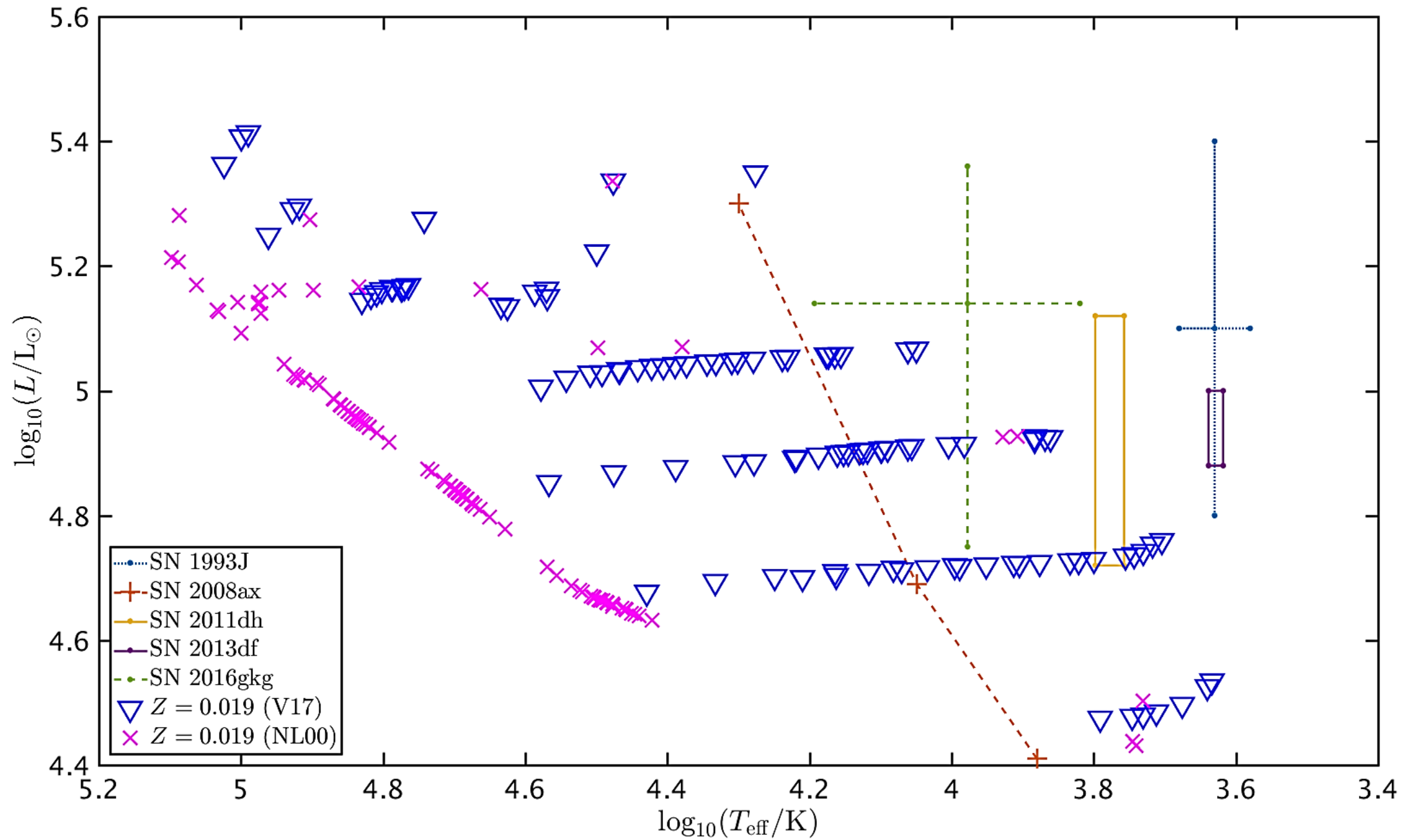


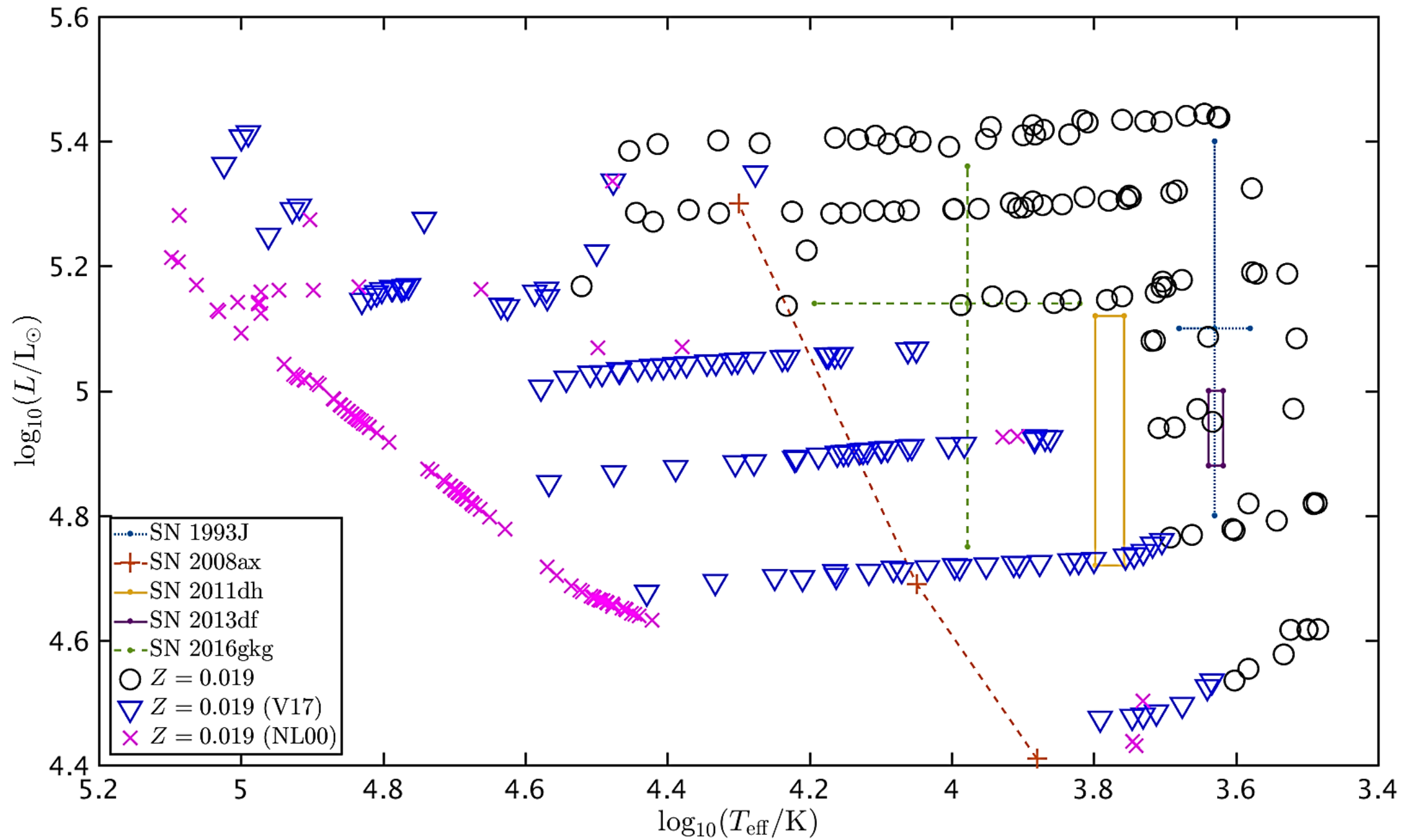
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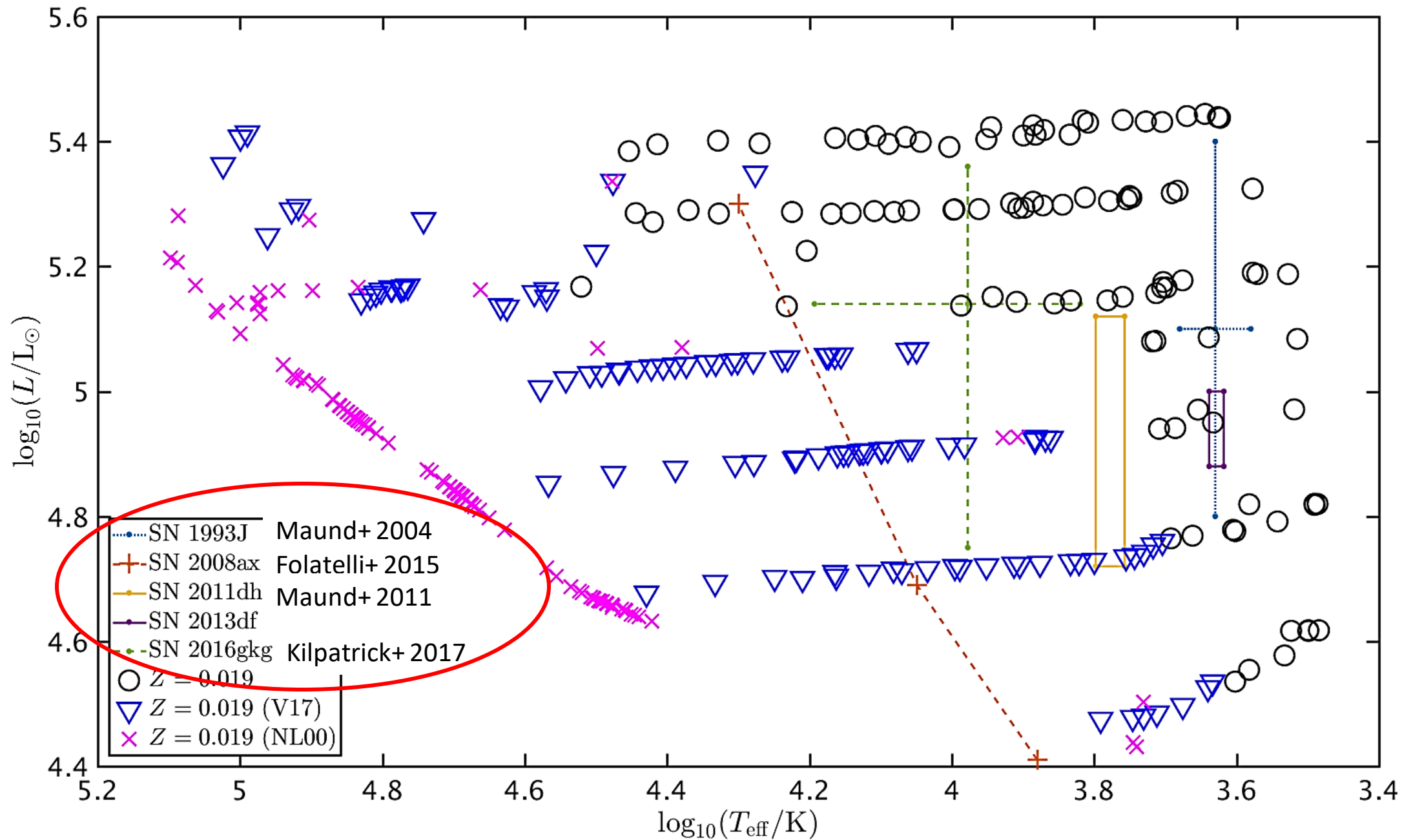


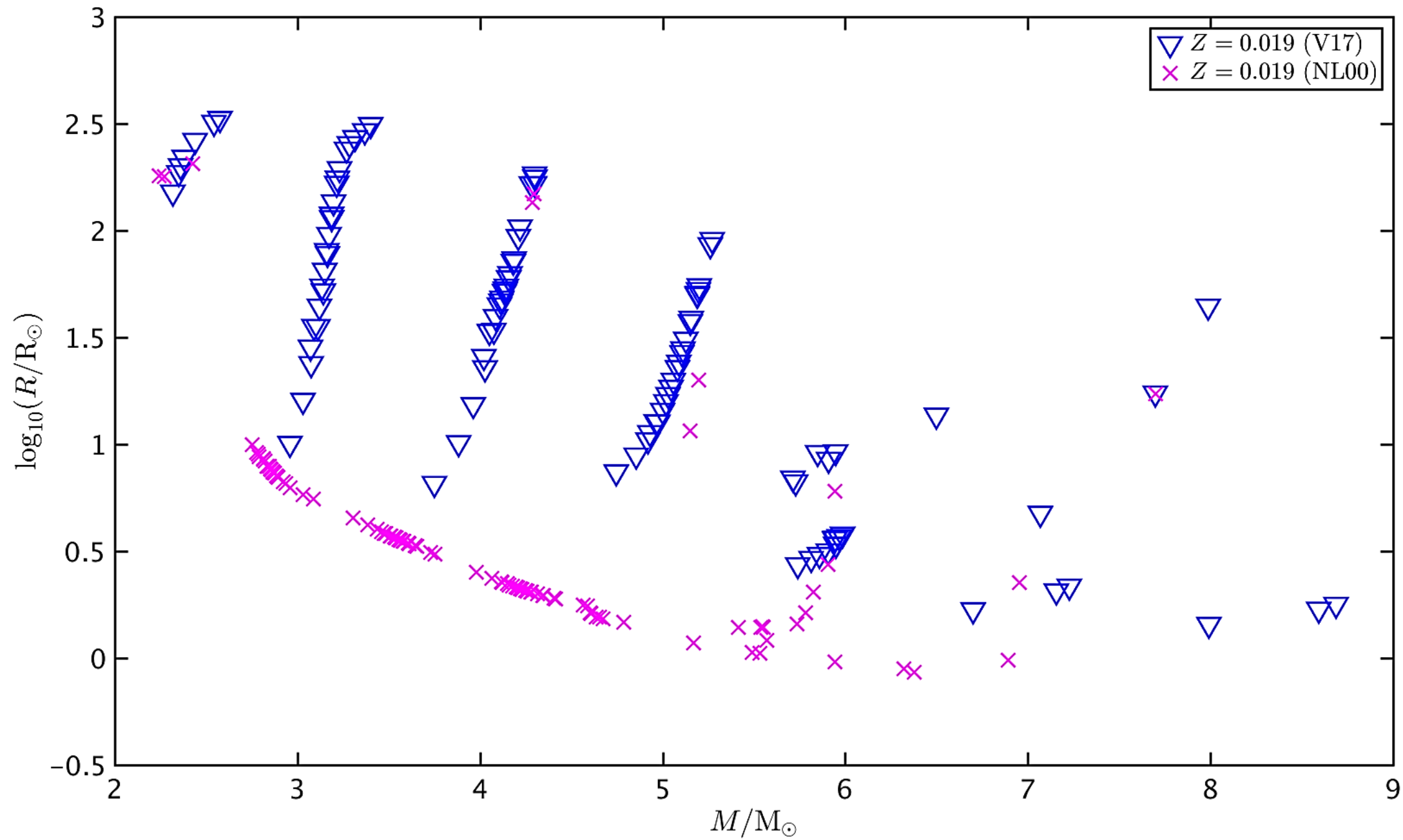


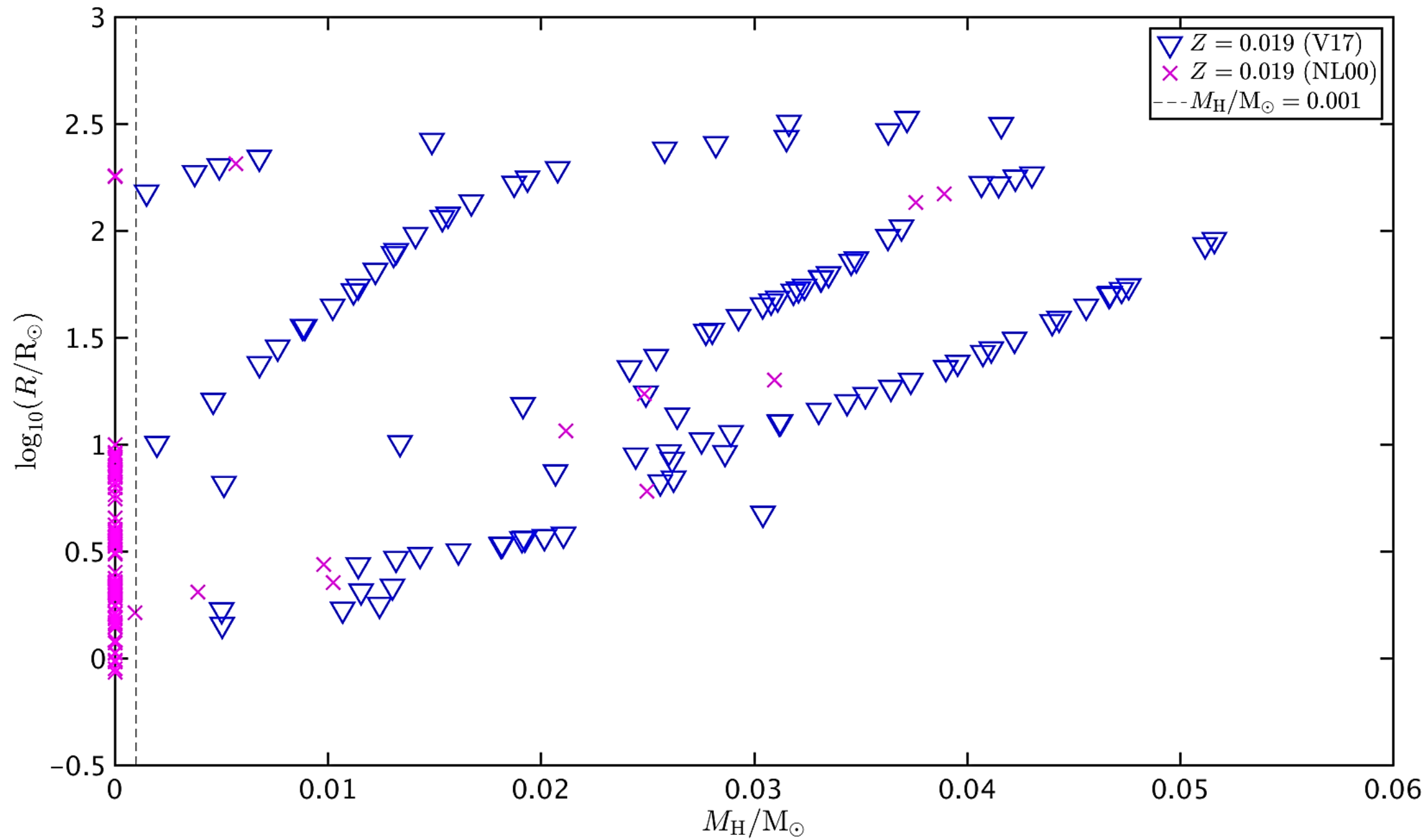




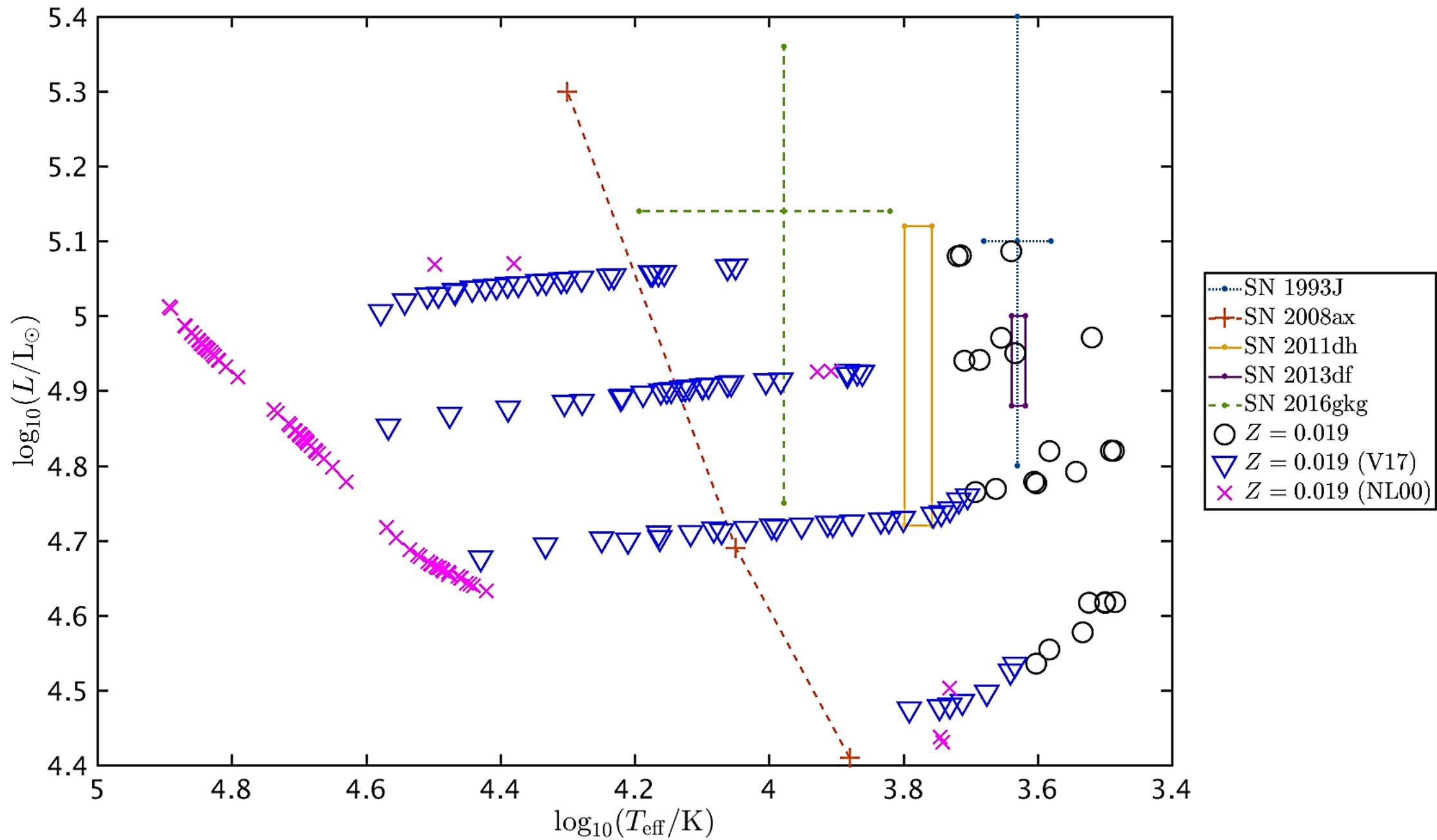


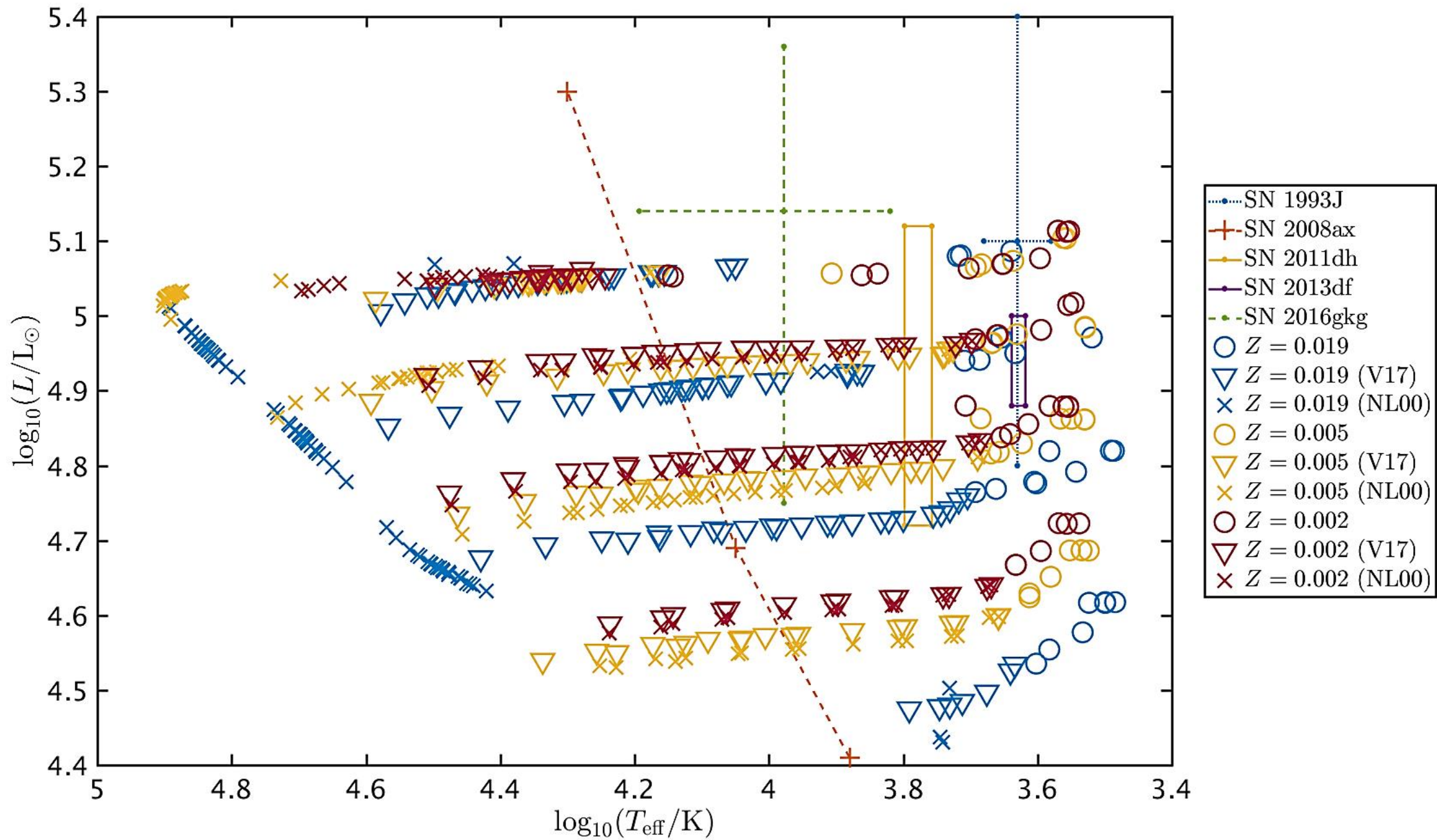


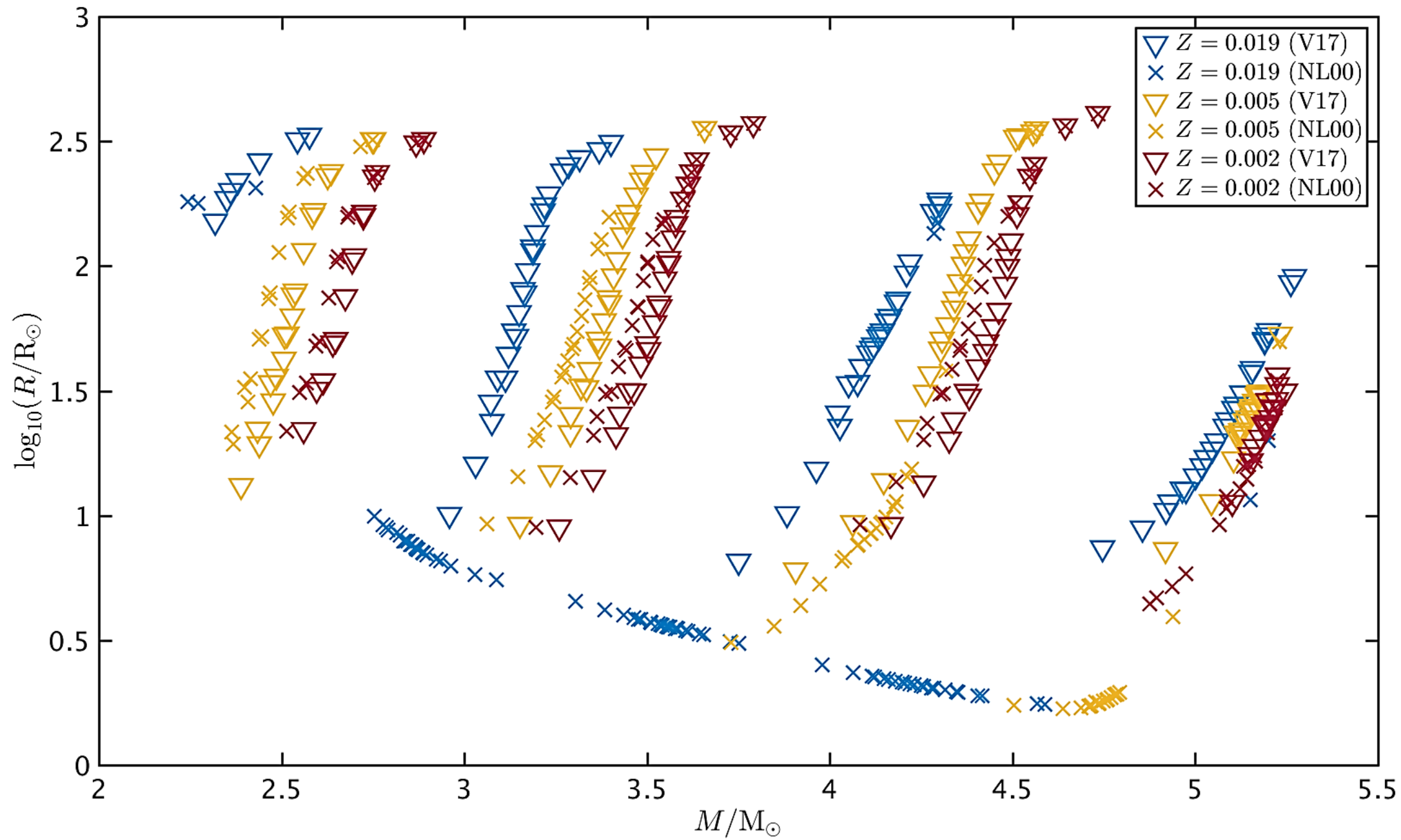




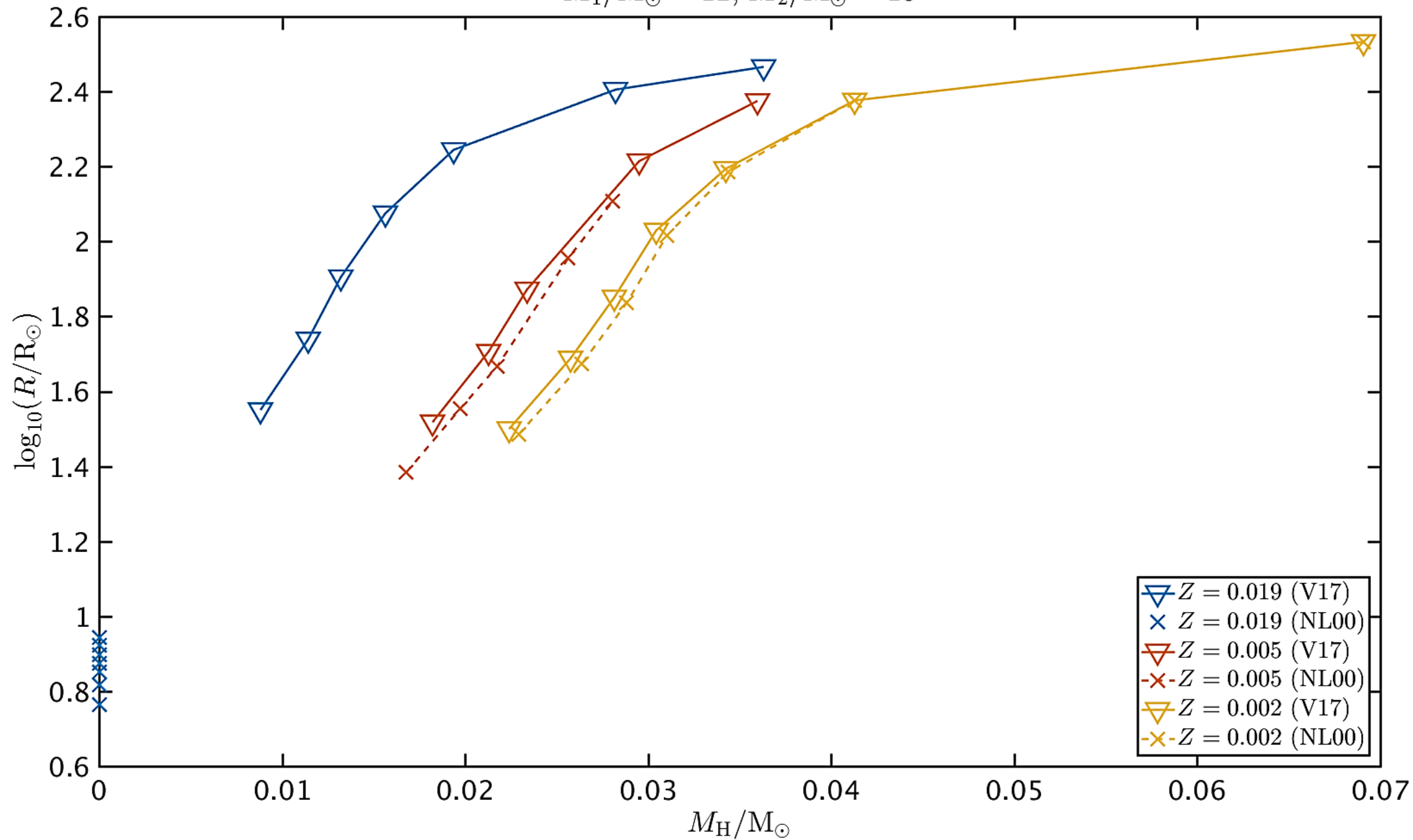
Metallicity effects







$M_1/M_\odot = 12, M_2/M_\odot = 10$



Summary

- Mass-loss assumption crucial for leftover hydrogen (SNe IIb)
- Metallicity-dependant relation between leftover hydrogen mass and progenitor size

