

Light elements in massive single and binary stars

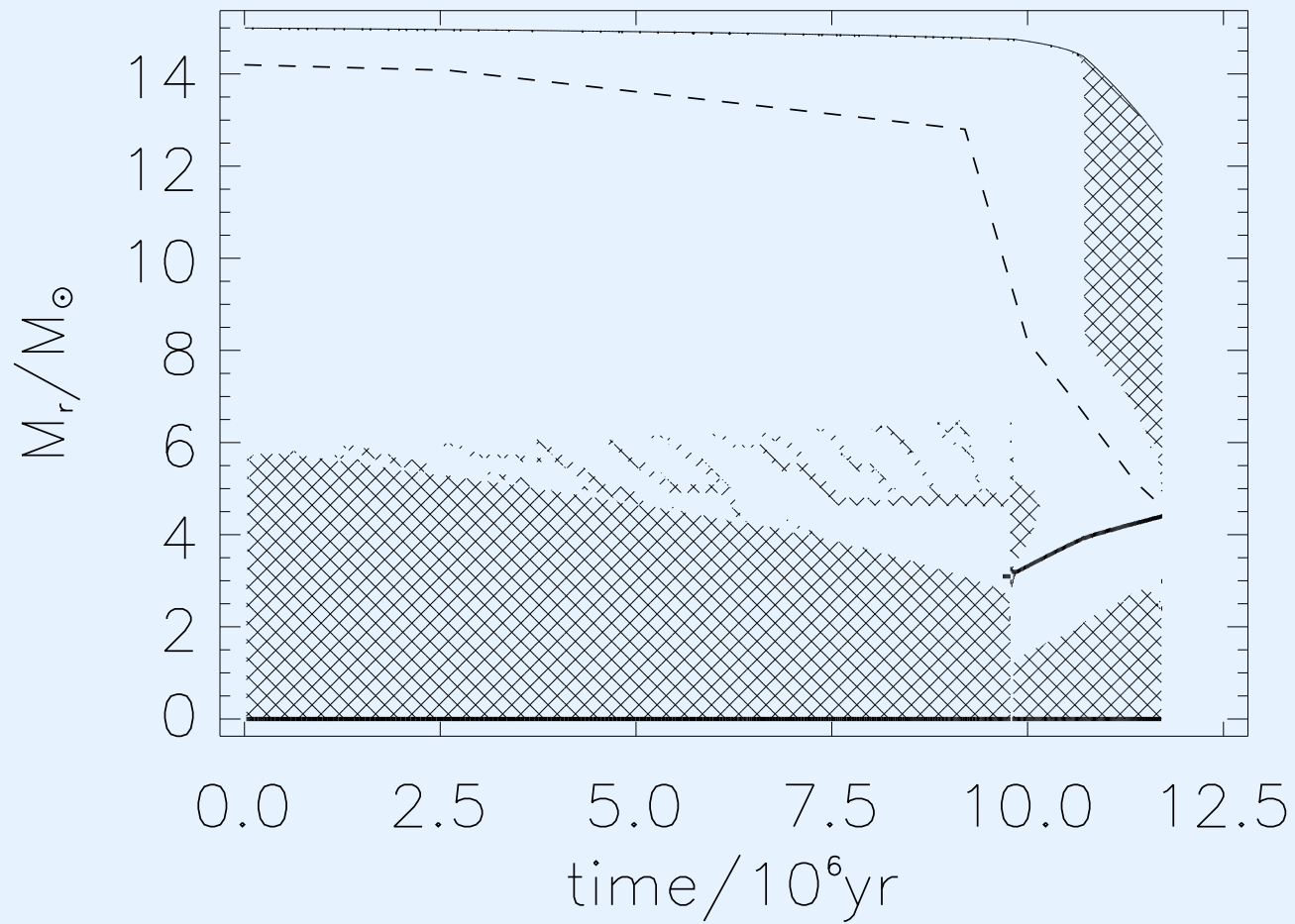
Norbert Langer (Bonn/Utrecht)



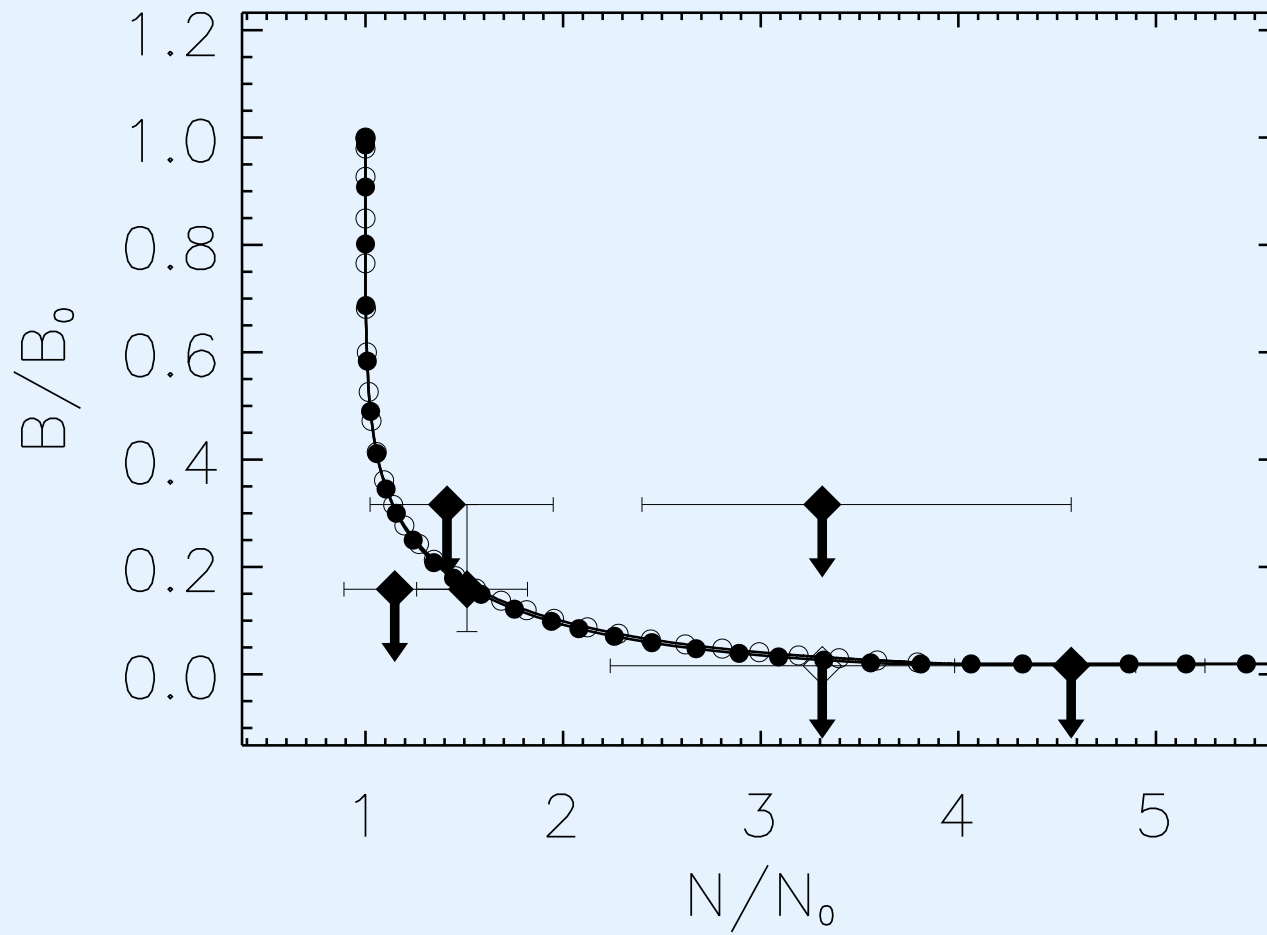
with

- Ines Brott (UU)
- Matteo Cantiello (UU)
- Selma de Mink (UU)
- Rob Izzard (Brussels)
- Sung-Chul Yoon (Bonn)

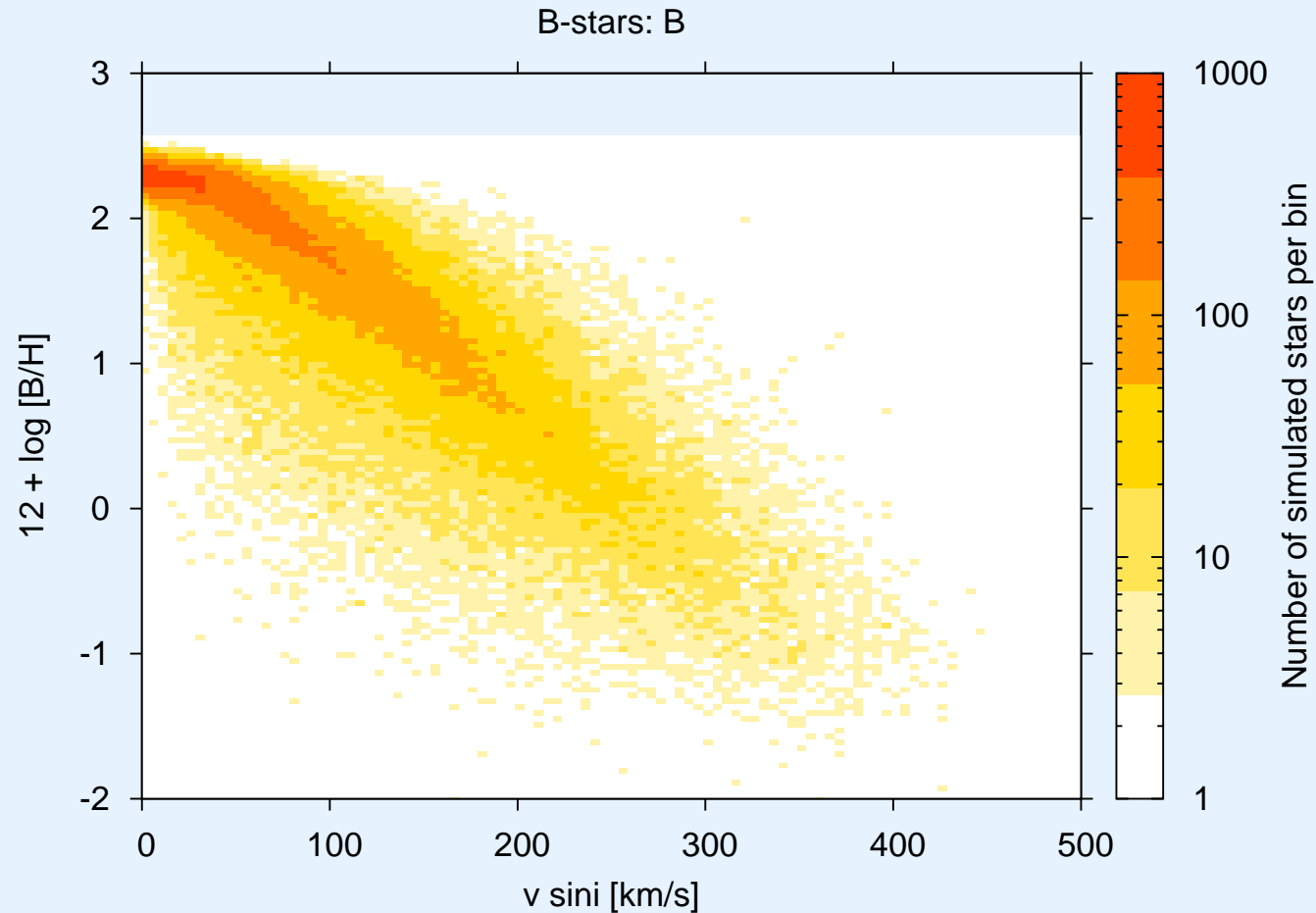
Boron depletion



Rotational mixing

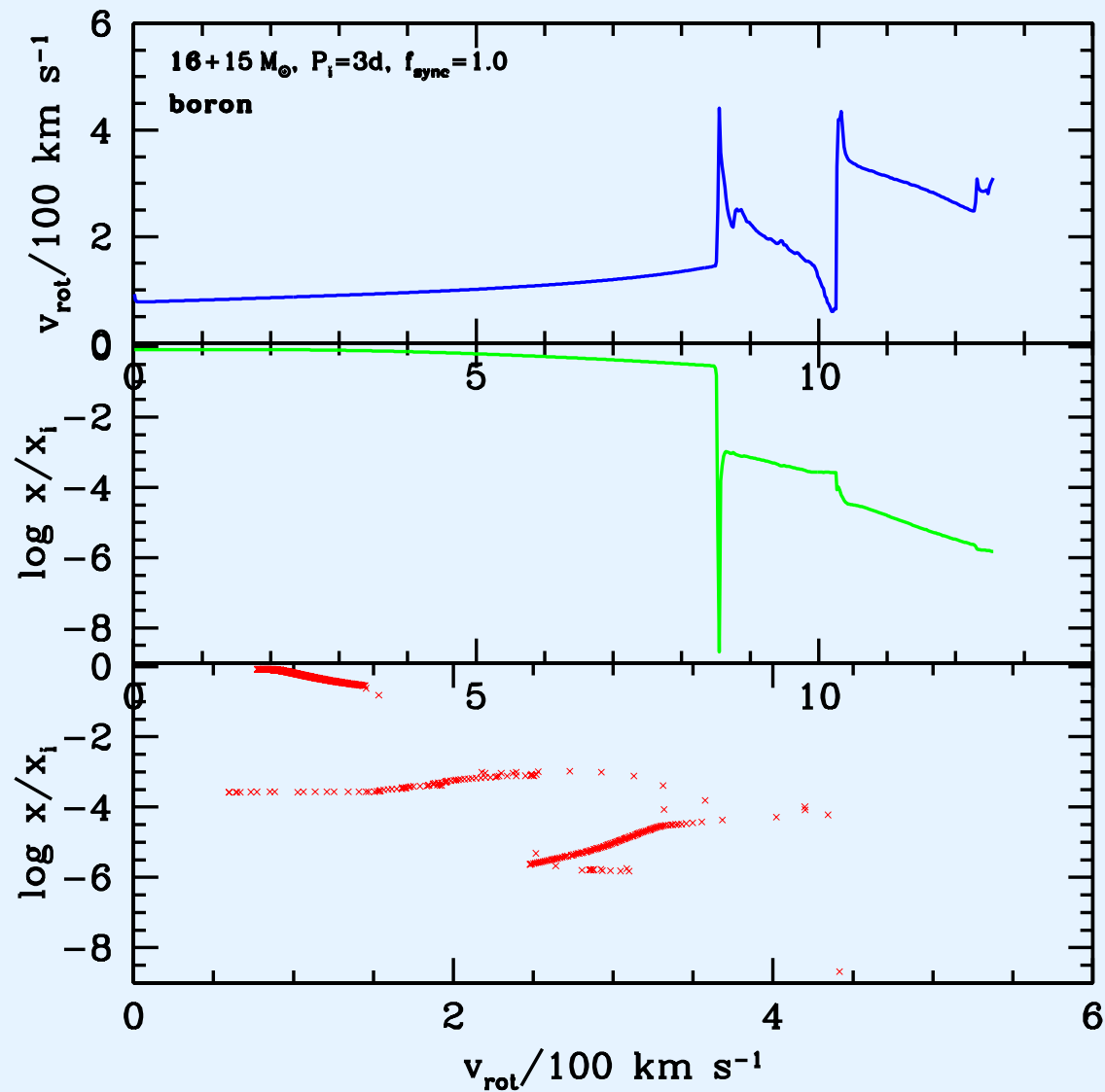


Rotational mixing: population

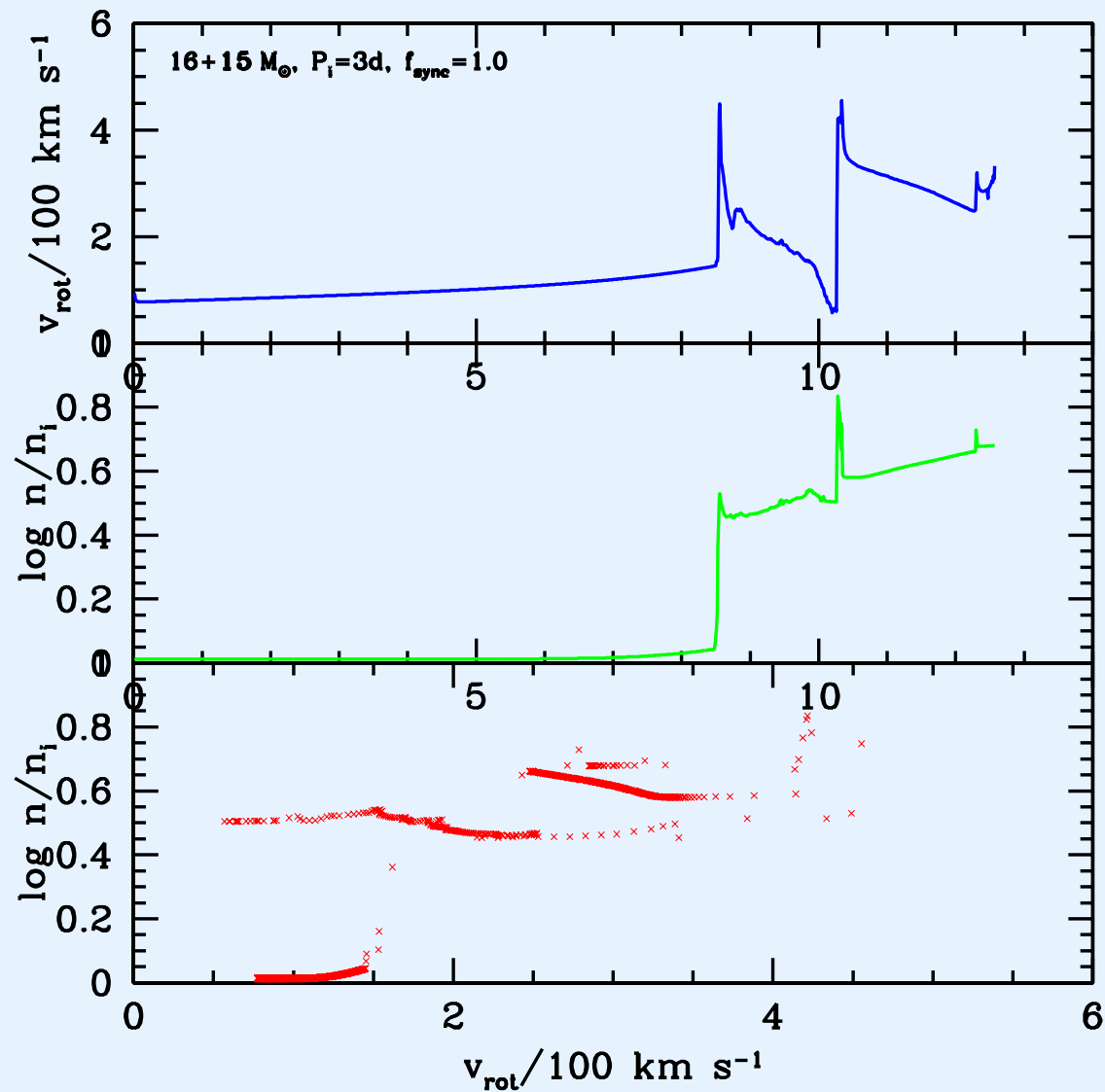


Ines Brott

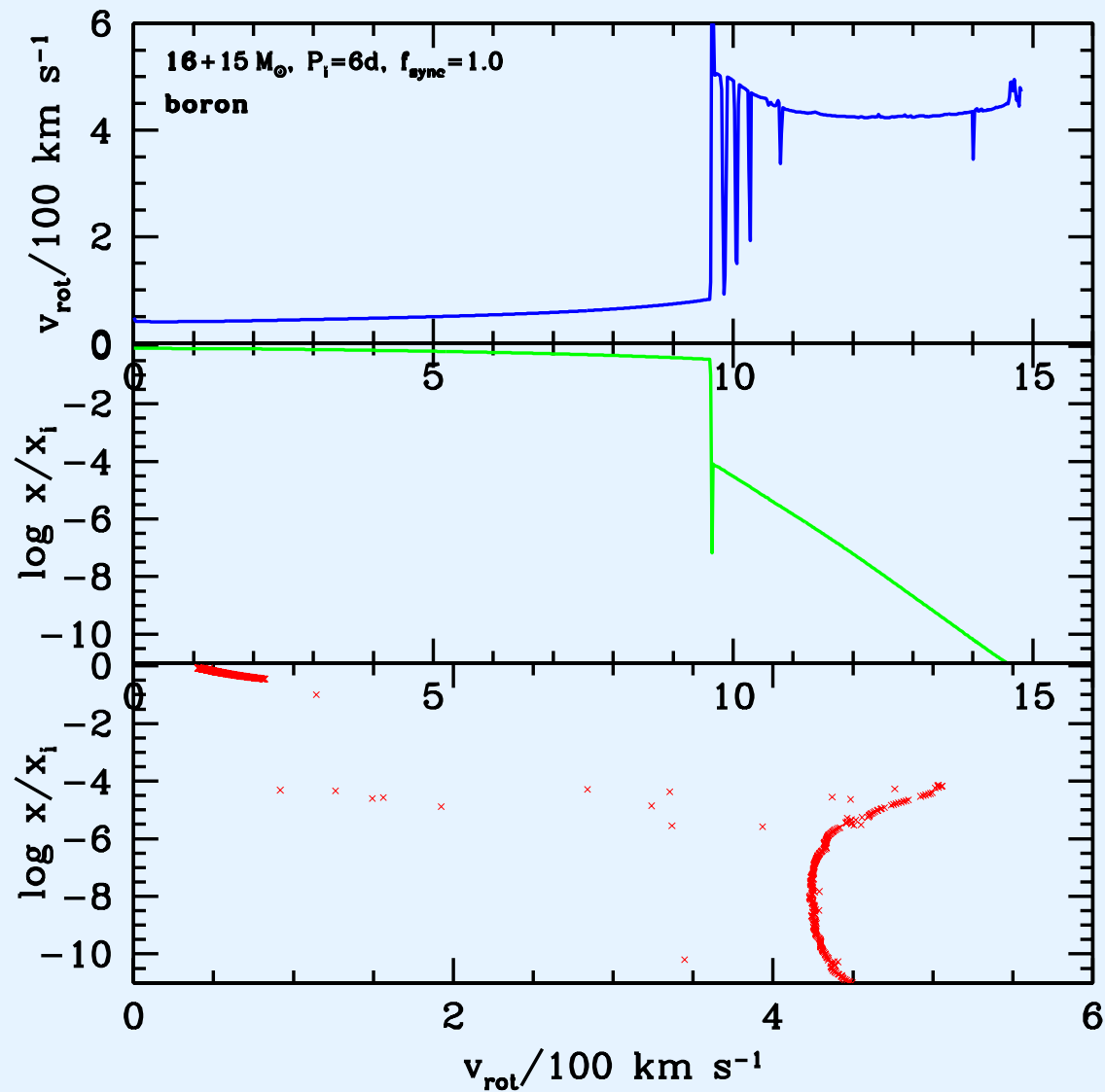
mass transfer: mass receiver



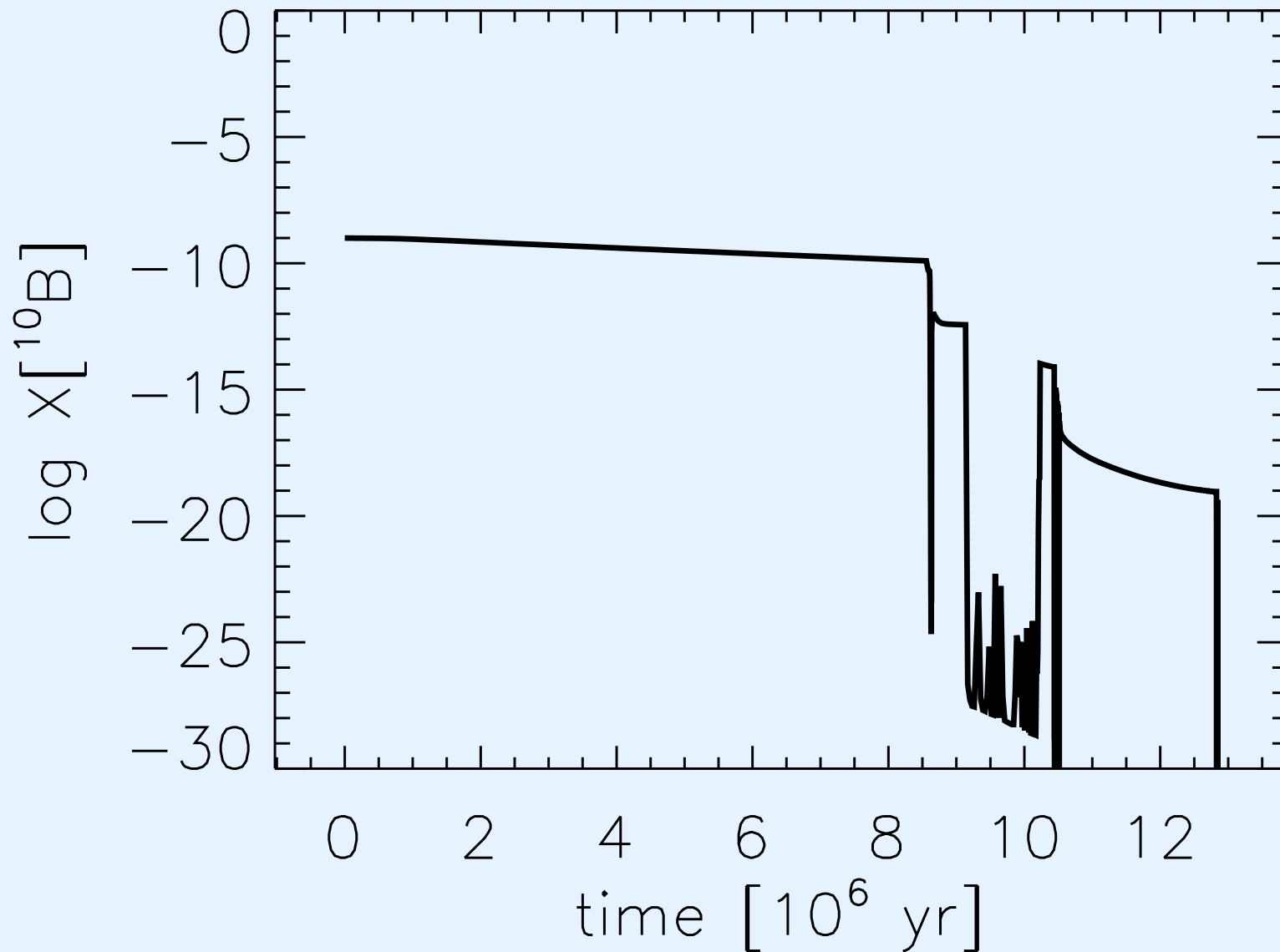
mass transfer: mass receiver



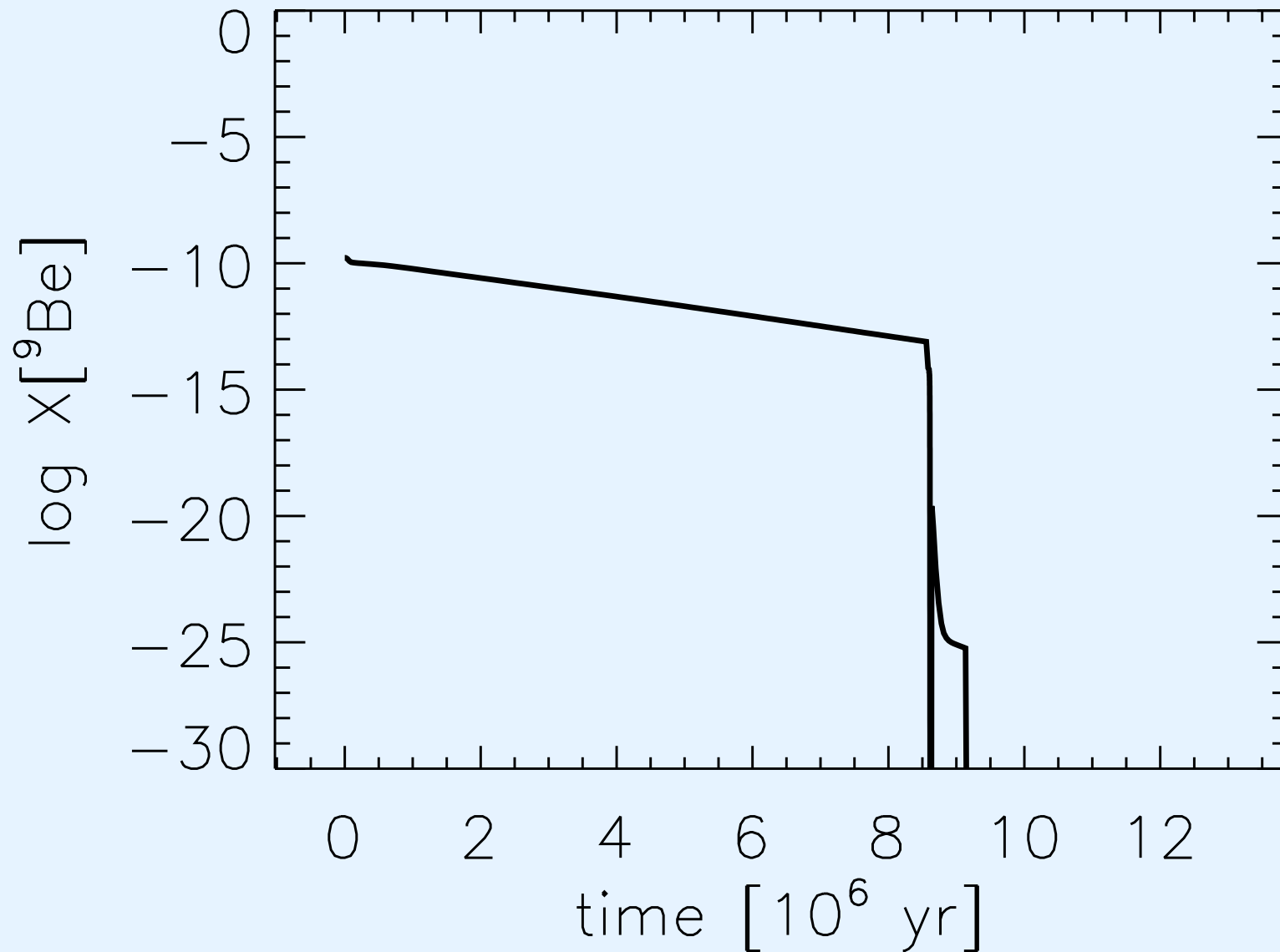
mass transfer: mass receiver



mass transfer: mass receiver



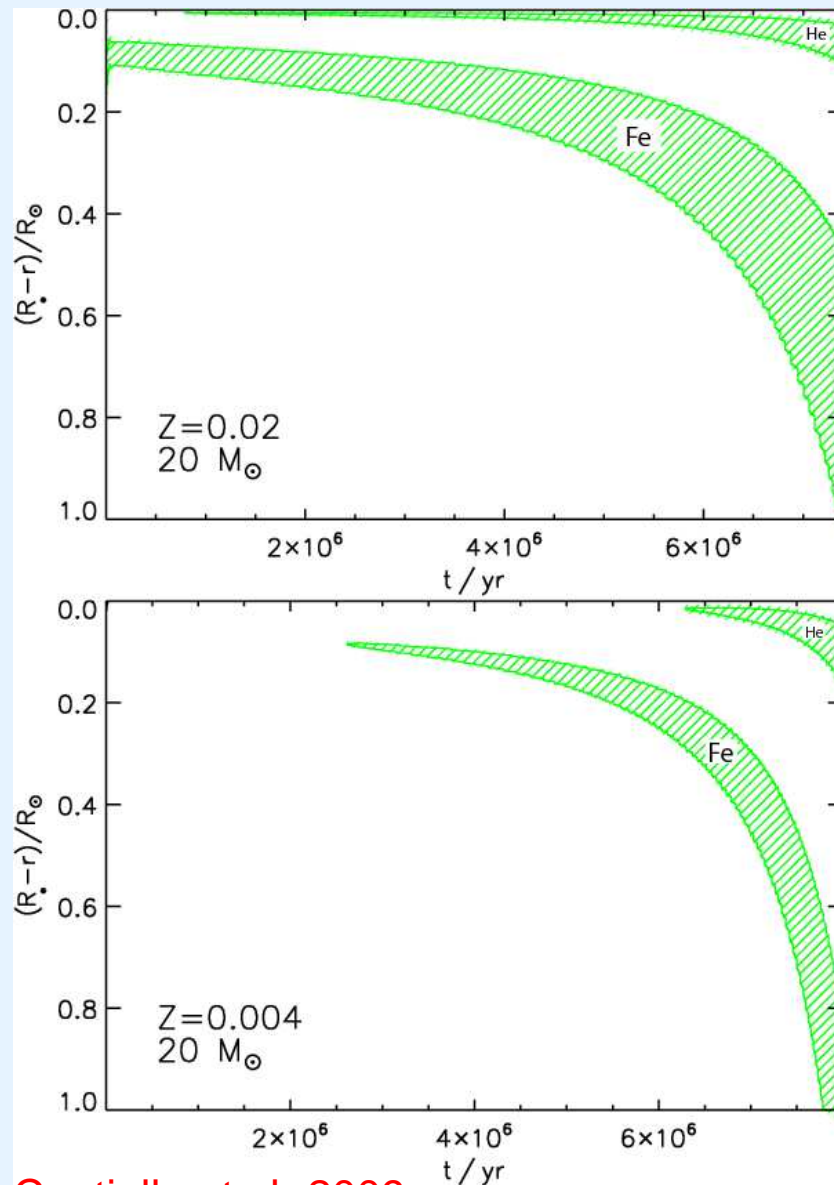
mass transfer: mass receiver



Complications

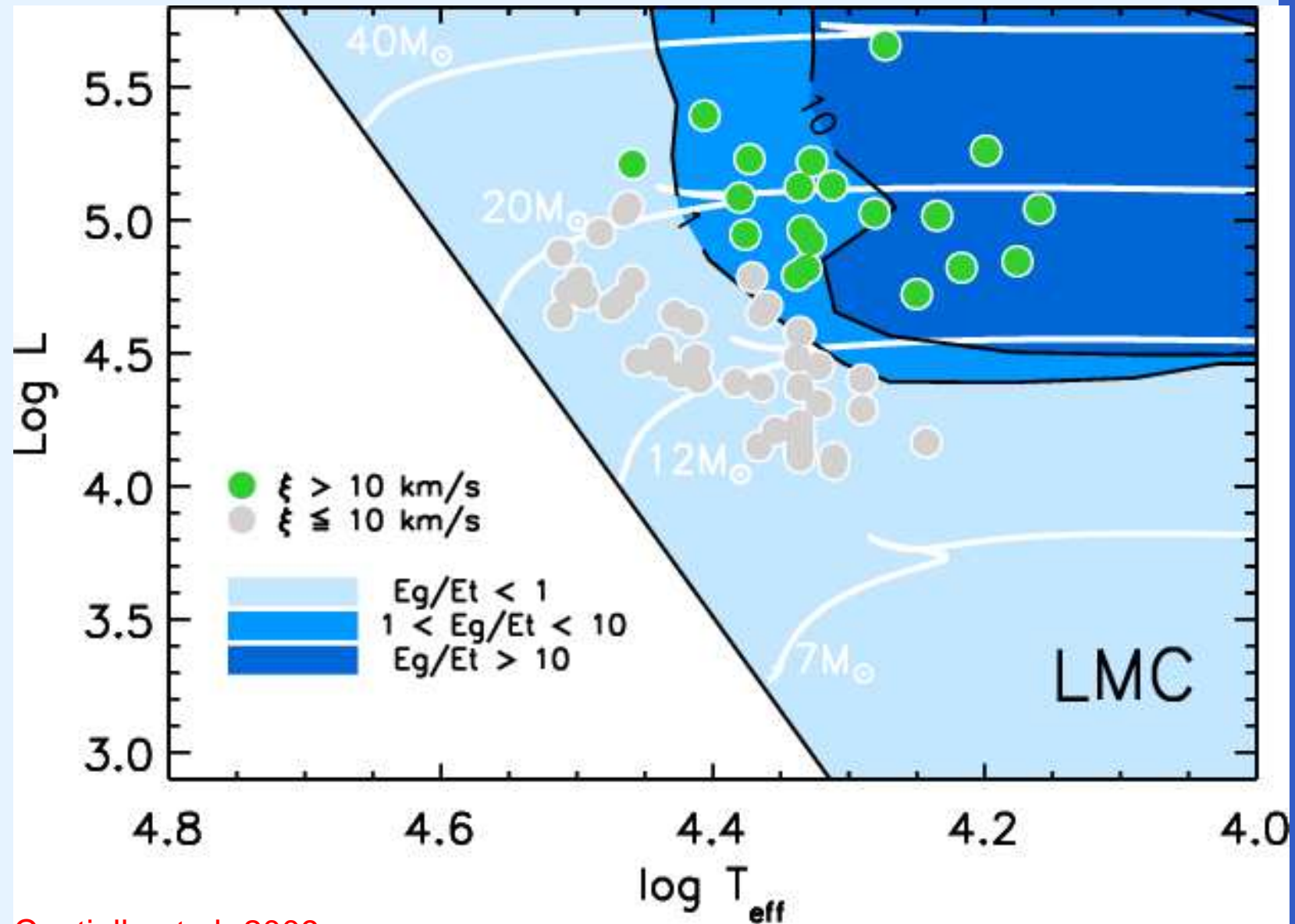
- mass loss
- surface convection
- unknown mixing processes

sub-surface convection

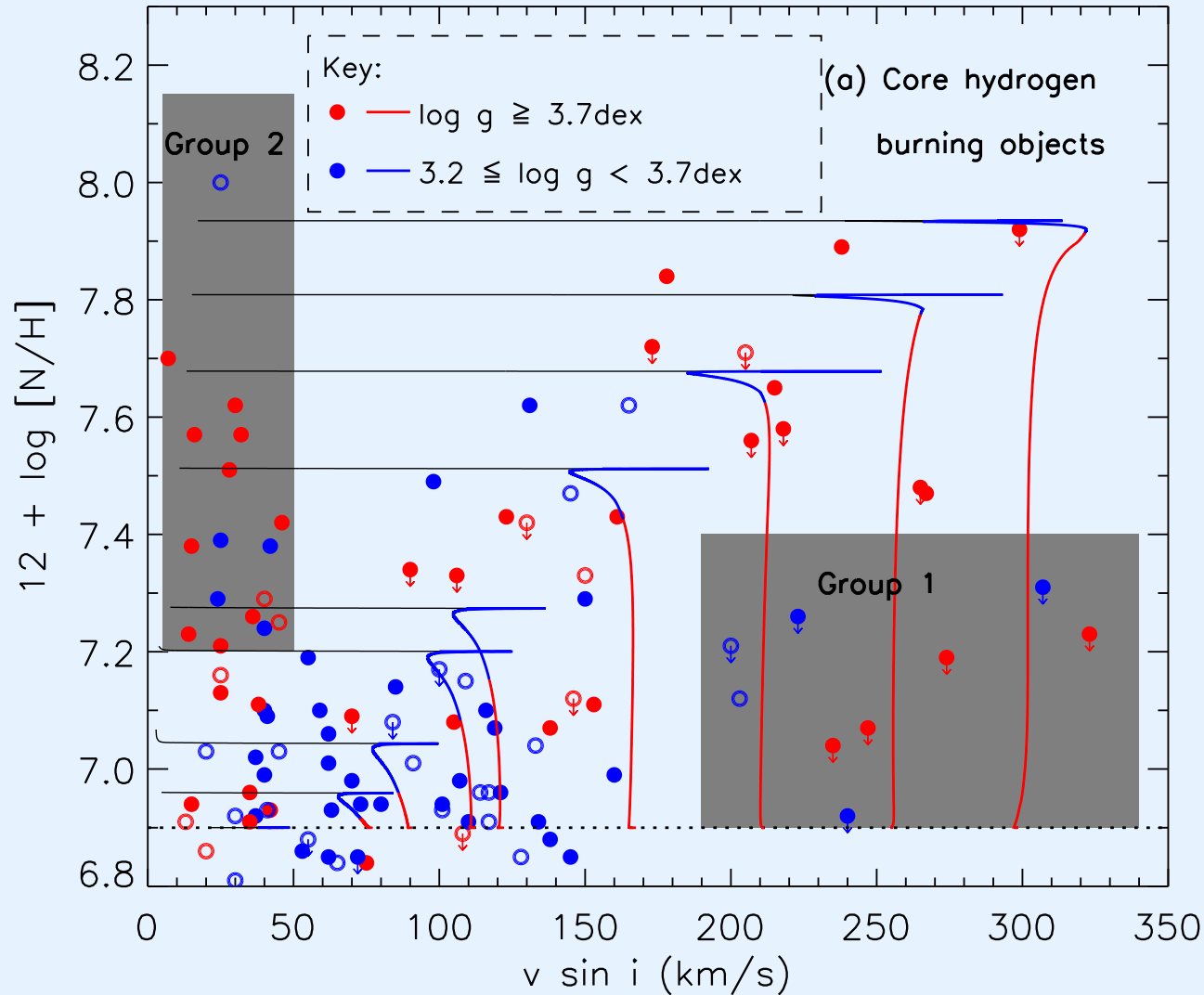


Cantiello et al. 2009

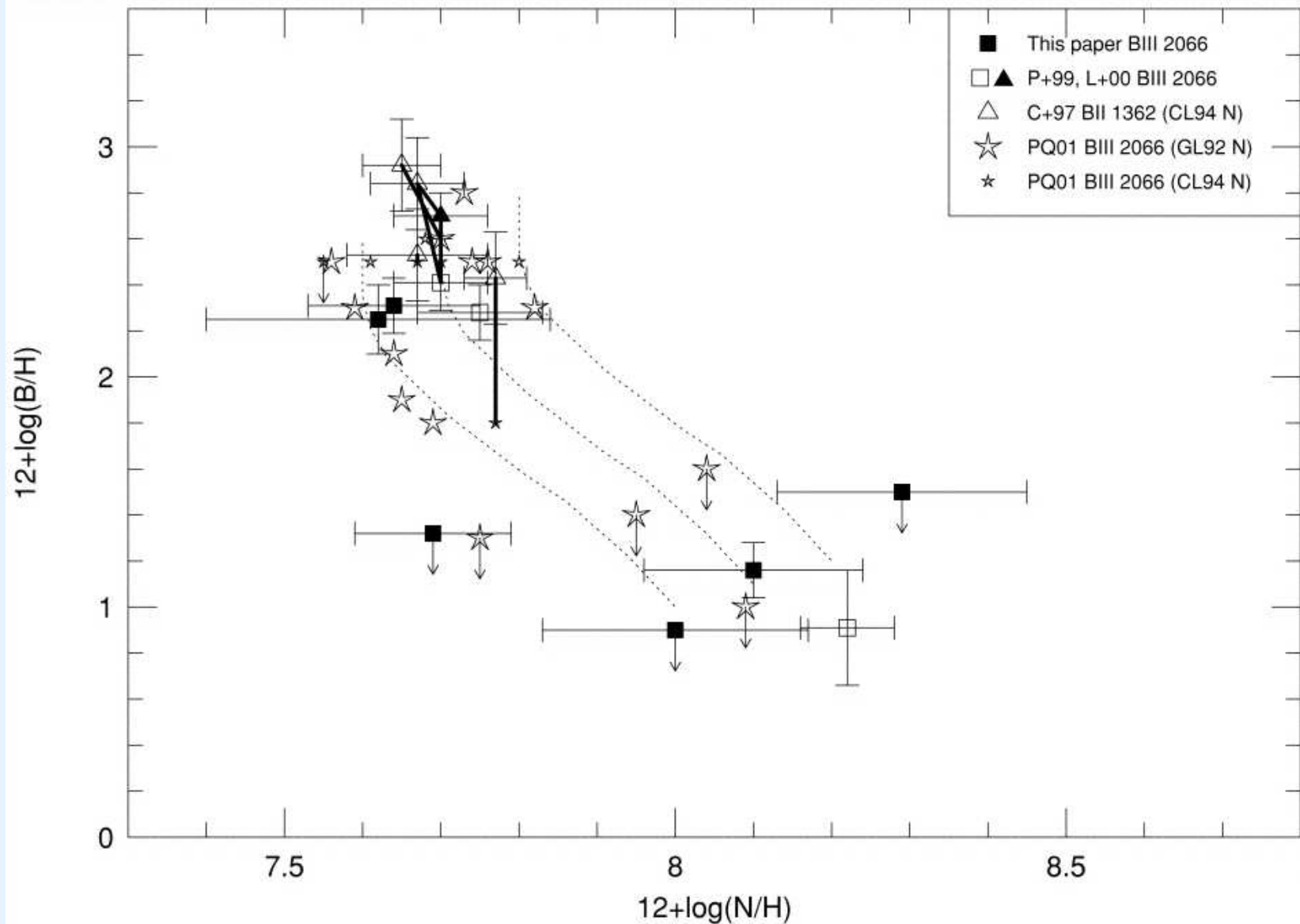
velocity fields



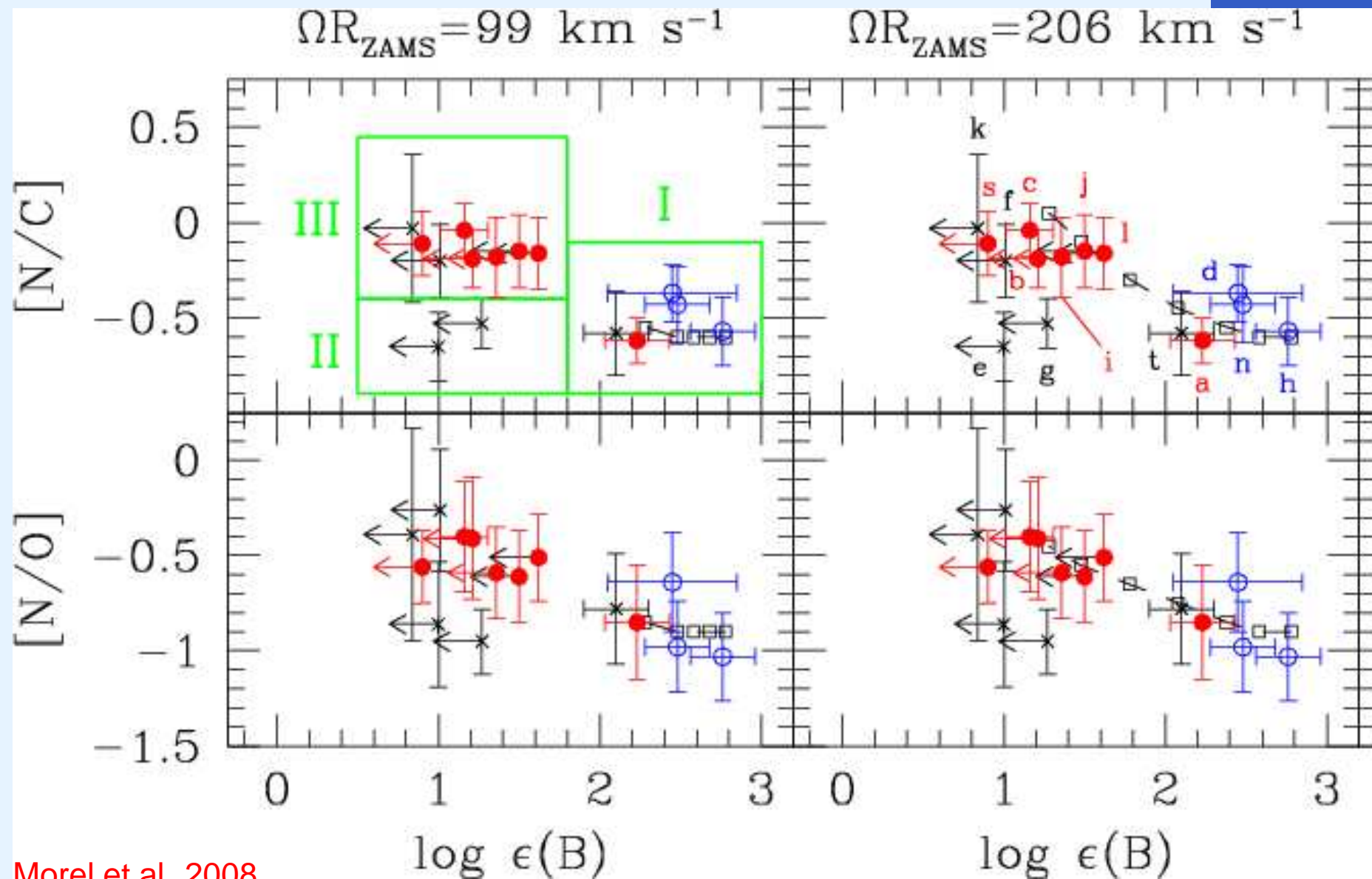
unknown mixing processes



unknown mixing processes



unknown mixing processes



Conclusions

- boron is extremely important diagnostic
- binaries are different
- unknow processes