

Homogeneous abundance and kinematic analysis of a large sample of barium stars

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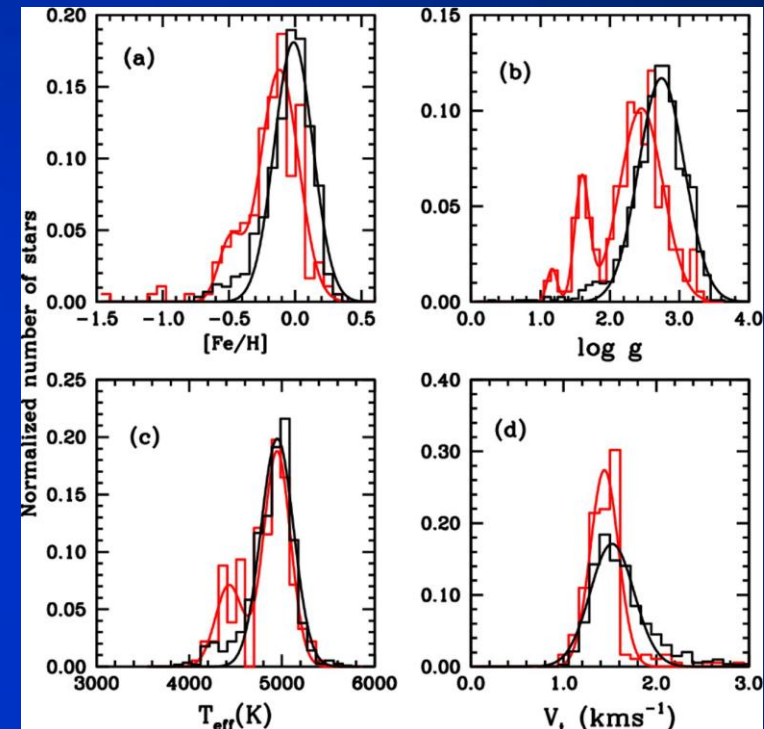
Sample: 182 barium stars

Observations: ESO 2.2m telescope + FEROS

R = 48000, S/N = 100-150

- Atmospheric parameters
- Spectroscopic distances
- Stellar masses, ages, luminosities
- Abundances: Na, Al, α -elements, iron-peak elements, s-process elements Y, Zr, La, Ce, Nd
- Radial velocities
- Space velocities U_{LSR} , V_{LSR} , W_{LSR}
- Probability for a star to be a member of the thick disk, the thick disc, or the halo population

Normalized histograms for the barium stars (red) and field giants of the literature (black)



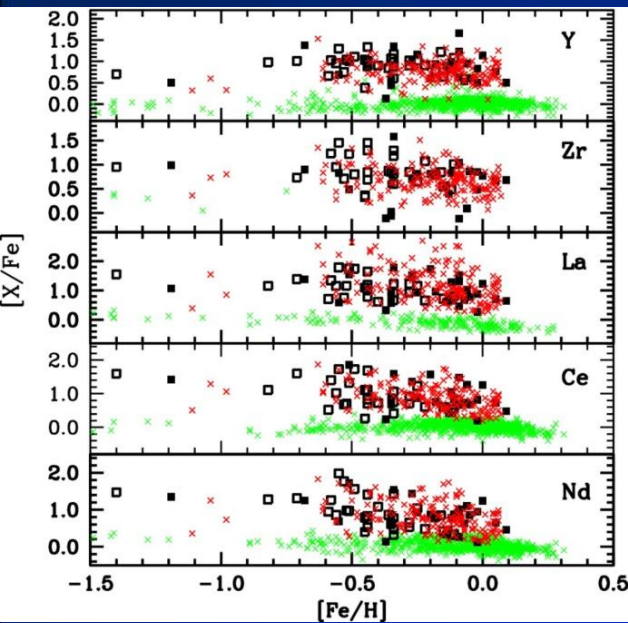
T_{eff} : 4847 / 4428 K ($\sigma = 145 / 146$)

$\log g$: 2.45 / 1.60 / 1.17
($\sigma = 0.31 / 0.11 / 0.07$)

$[\text{Fe}/\text{H}]$: - 0.12 / - 0.49 ($\sigma = 0.14 / 0.09$)

V_t : 1.44 km/s ($\sigma = 0.15$)

Field giants: Mishenina et al. (2006);
Luck & Heiter (2007); Hekker & Melendez
(2007); Takeda et al. (2008)



Abundance ratio $[X/Fe]$ versus $[Fe/H]$ for the elements of the s-process.

Green crosses represent field giants and red crosses the barium giants analysed in this work. Filled and open squares represent the $[X/Fe]$ ratios, respectively, for barium giants and dwarfs from the literature.

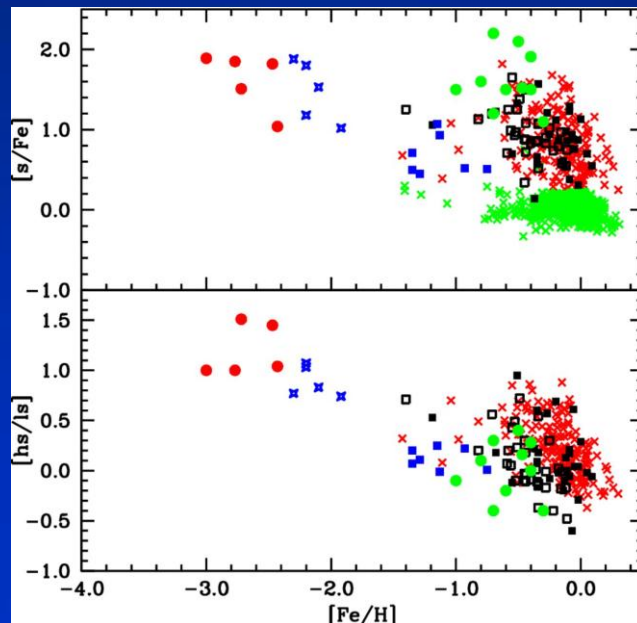
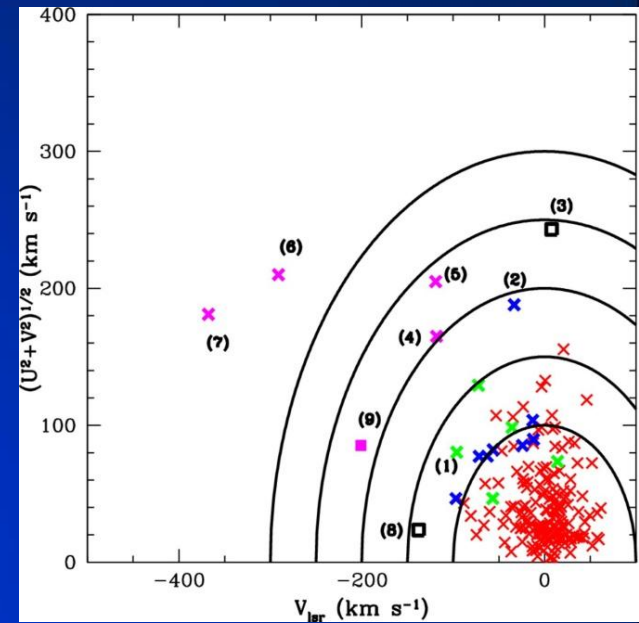


Diagram of $[s/Fe]$ (top) and $[hs/ls]$ (bottom) versus $[Fe/H]$ for several classes of chemically peculiar binary stars.

Red crosses - barium giants analysed in this work; red filled circles - CEMP-s stars; blue stars - CH stars; blue filled squares - yellow symbiotics; green filled circles - post-AGB stars.



Toomre diagram for the barium stars analysed in this work.

Red crosses - the stars of the thin disc population; green - the stars of the thin/thick disc; blue the stars of the thick disc. Magenta crosses - the stars of the halo population.

(8) and (9) - two rejected barium stars