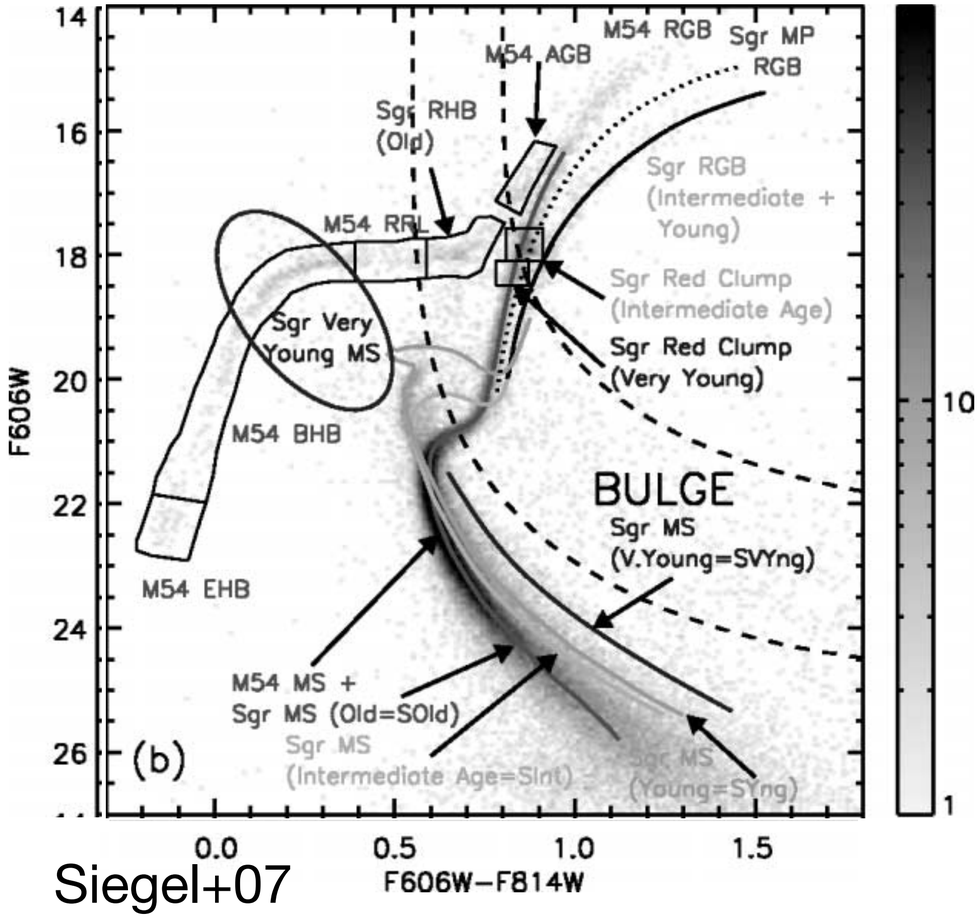
The early chemical evolution of the Sagittarius dwarf galaxy

Federico Sestito and the Pristine Inner Galaxy Survey

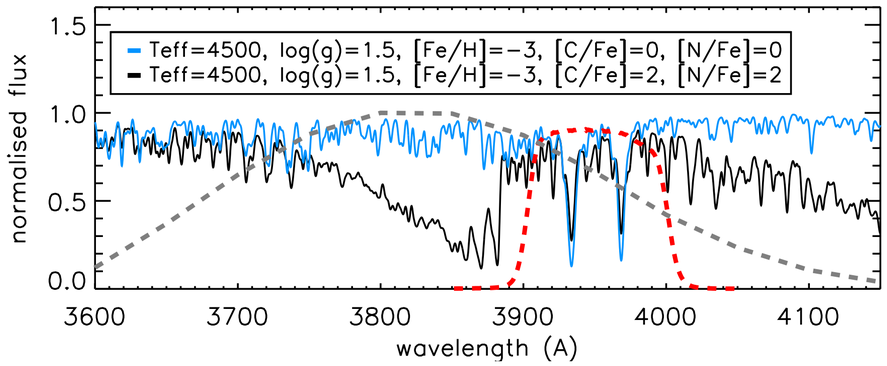
University of Hertfordshire UH

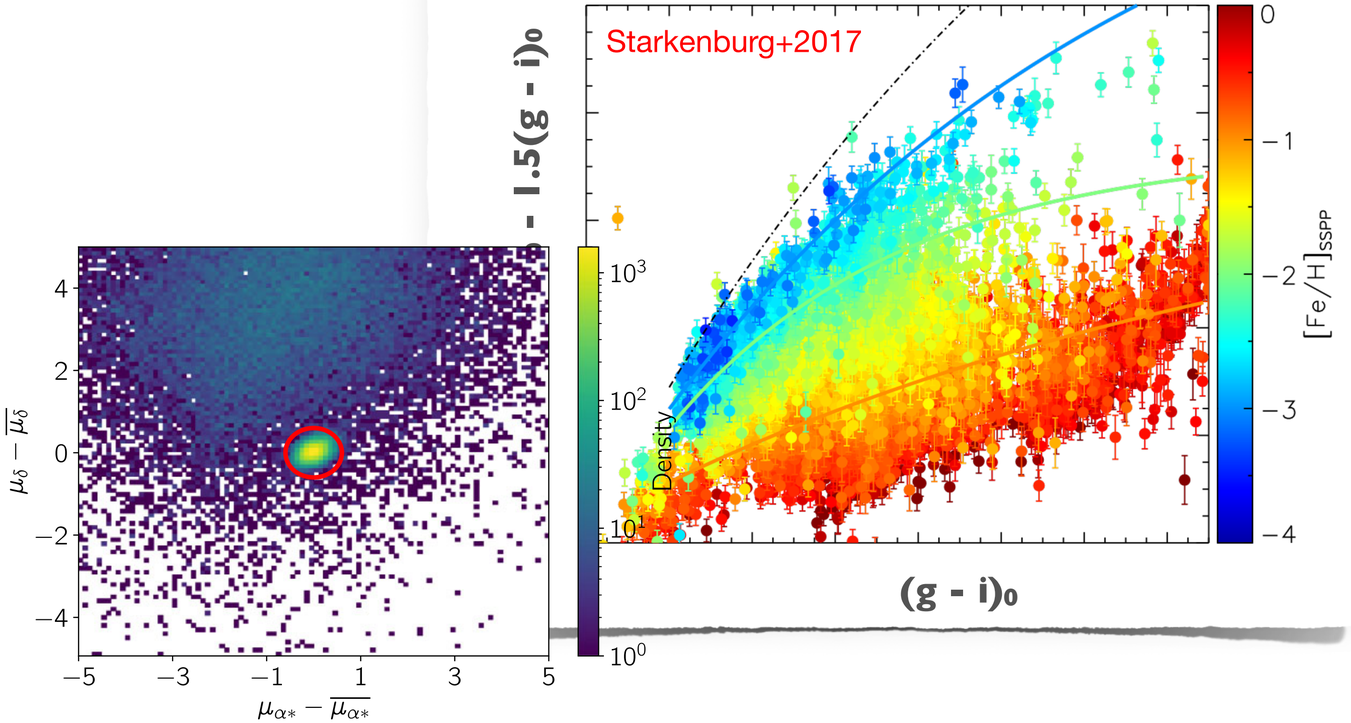
f.sestito@herts.ac.uk



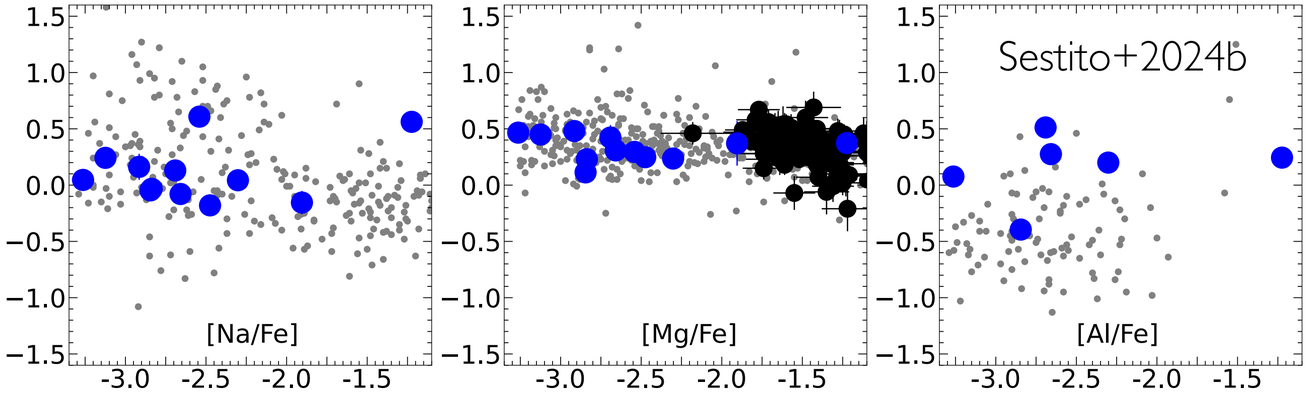
Siegel+07

Ca H&K+ broad band to find the most metal-poor stars

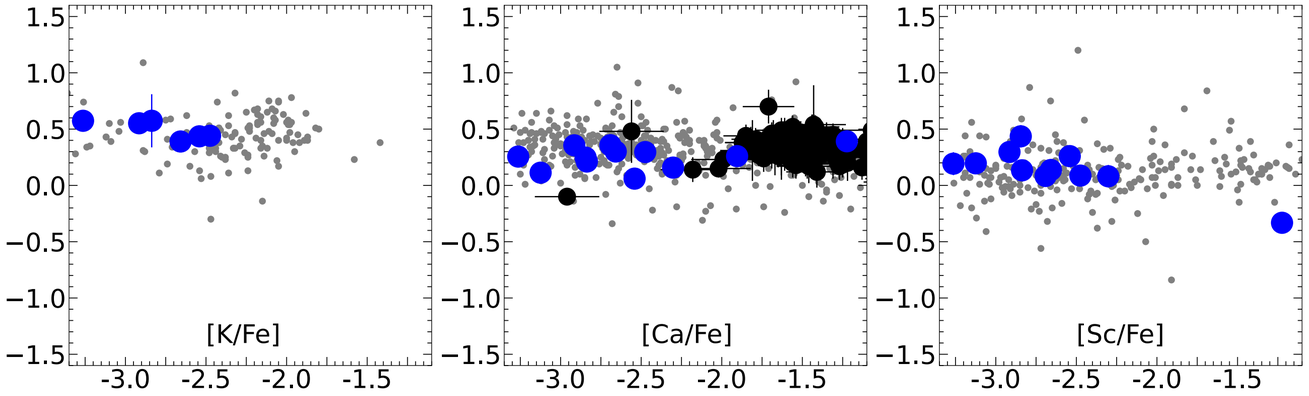




The unexplored very metal-poor tail of the Sagittarius core

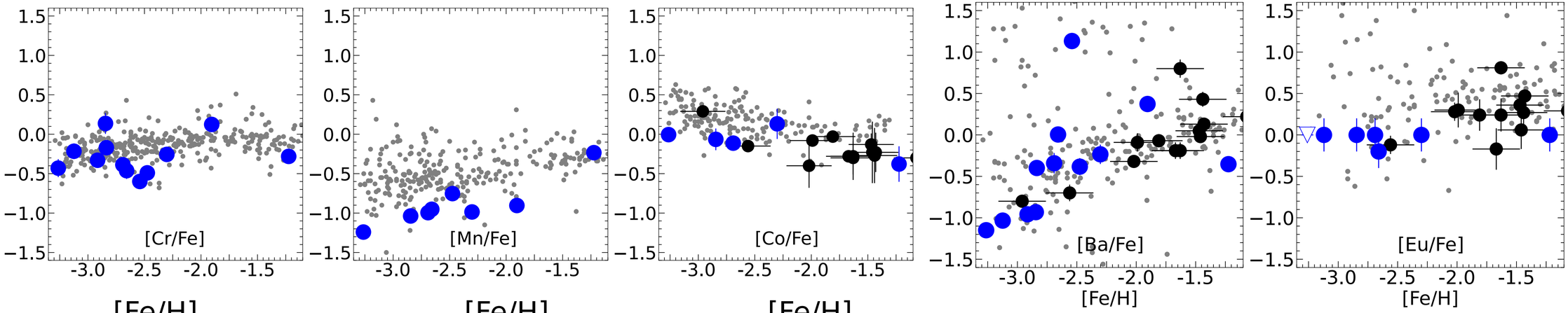


Very MP: [Fe/H] < -2
Extremely MP: [Fe/H] < -3

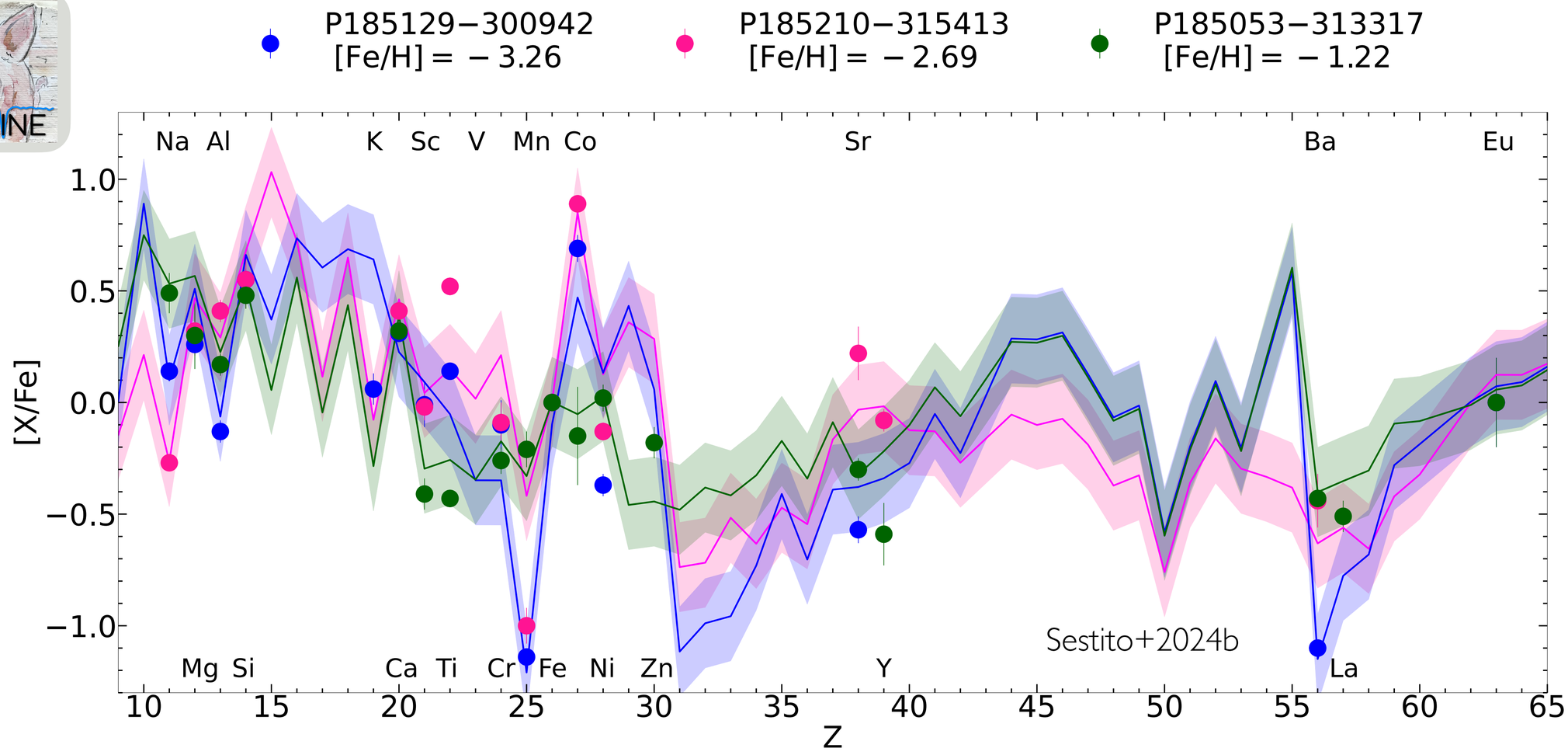


+ C, Si, Ti, Ni, Zn, Sr, and Y

- MW Halo
- Sagittarius Literature
- Sagittarius PIGS/MIKE

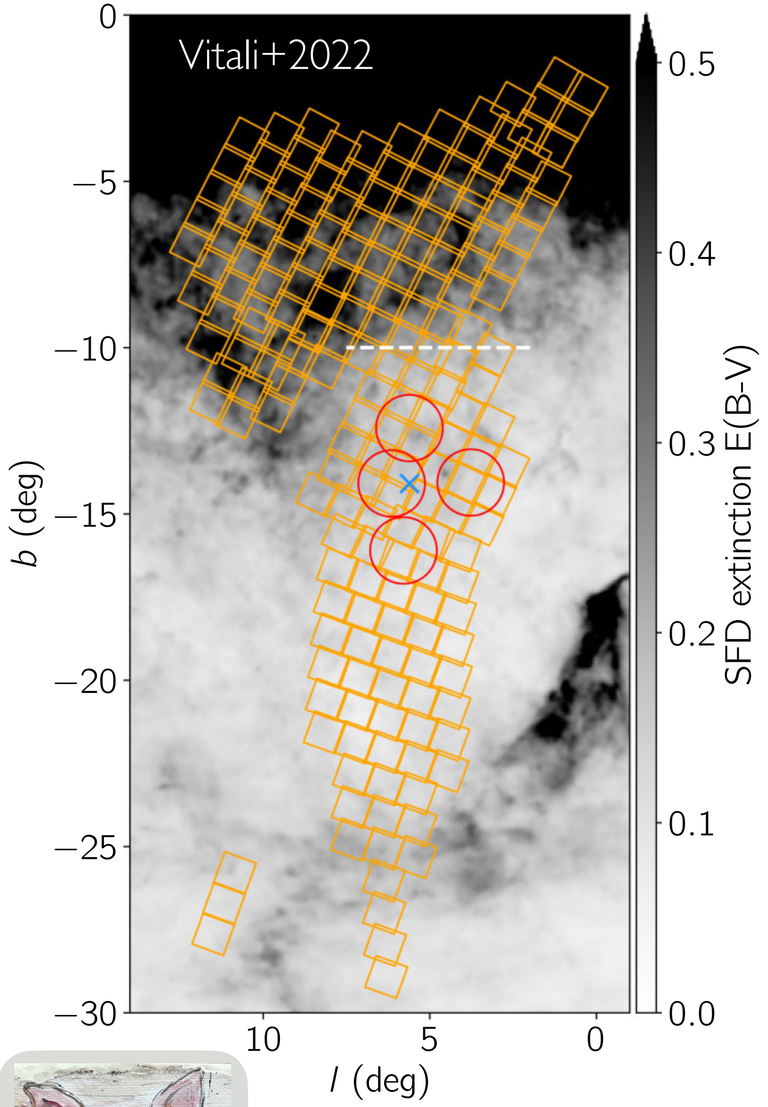


Recipe for the most metal-poor stars in Sagittarius (from StarFit)



- From C to Zn: High-energy and hypernovae with $10 - 70\ \mathrm{M}_{\odot}$
- n-capture: neutron stars merger, fast-rotating metal-poor stars, AGBs
- no SNe Ia at [Fe/H] < -2

The low-metallicity Sgr's core from PIGS low-/medium- resolution AAT



- 4 dedicated AAT fields: radial velocity, [Fe/H], [C/Fe]

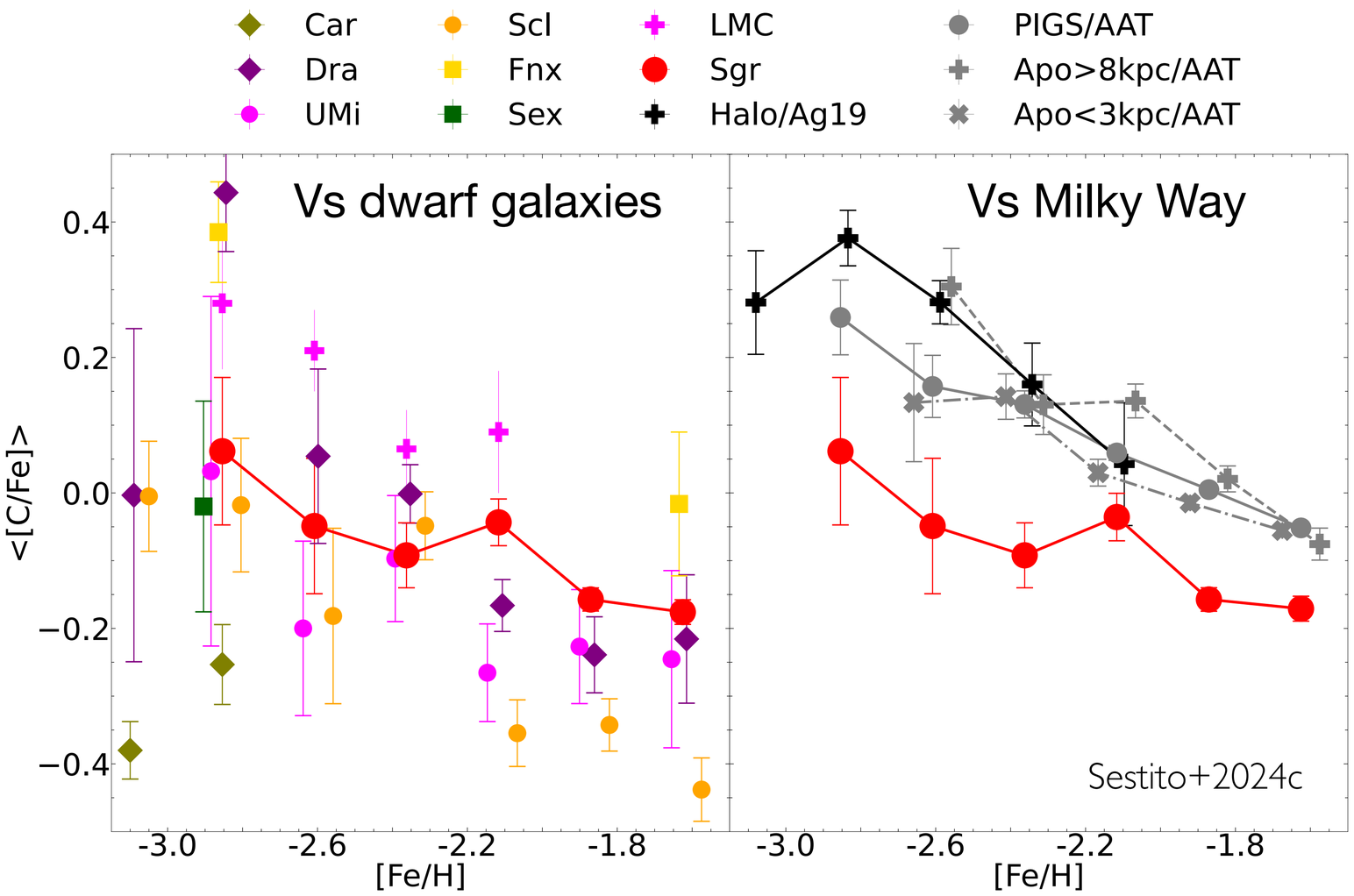
Using Gaia proper motion and AAT radial velocity:

- 835 Sgr members
- 356 Sgr members with accurate [Fe/H]< -1.5 and [C/Fe]

What can we learn from carbon?

Are there any differences respect to the MW or other dwarf galaxies?

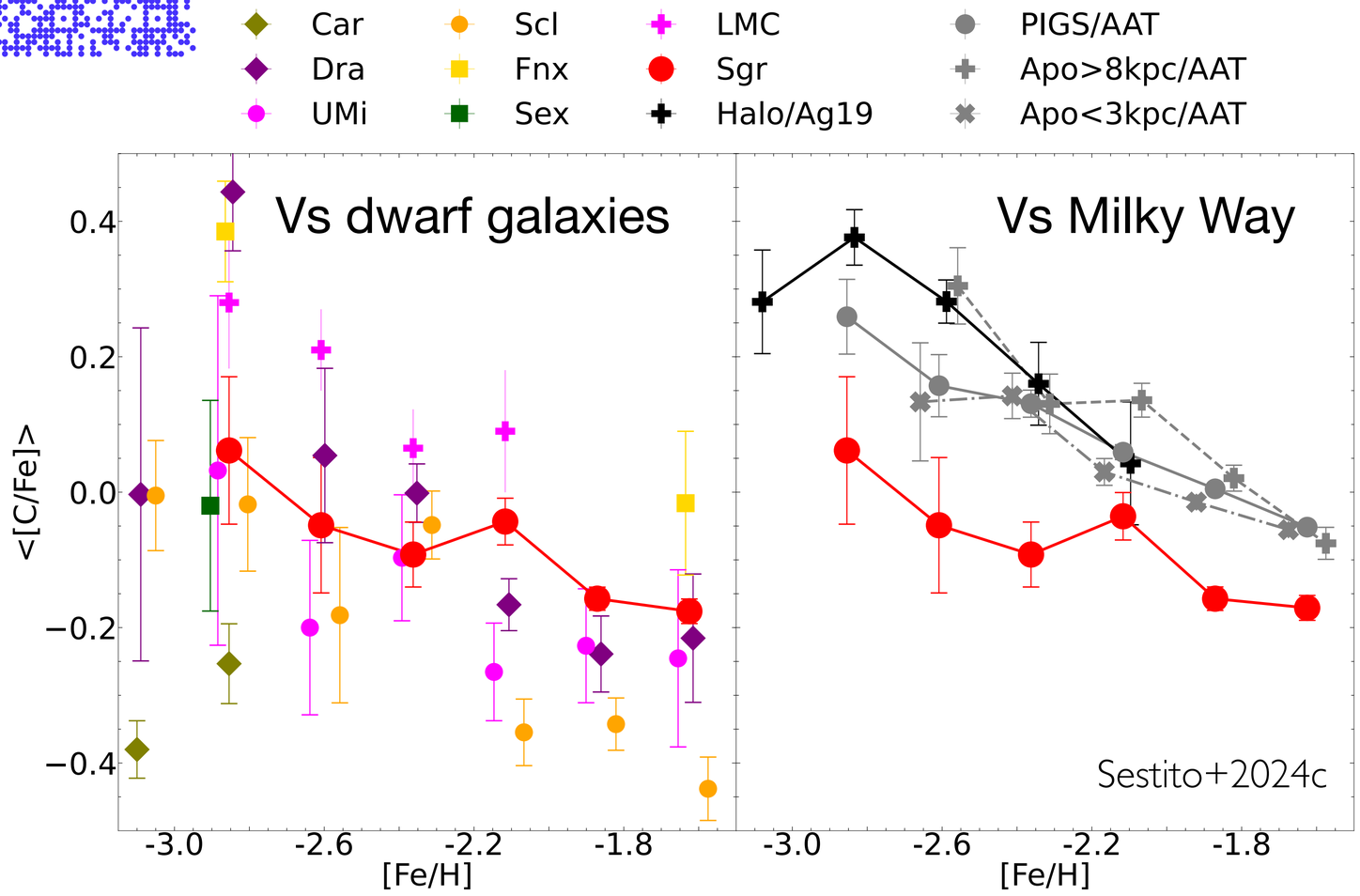
The low-metallicity Sgr's core from PIGS low-/medium- resolution AAT



[C/Fe] in line with other dwarf galaxies

[C/Fe] lower than Milky Way halo or MP bulge

The low-metallicity Sgr's core from PIGS/AAT



[C/Fe] in line with other dwarf galaxies

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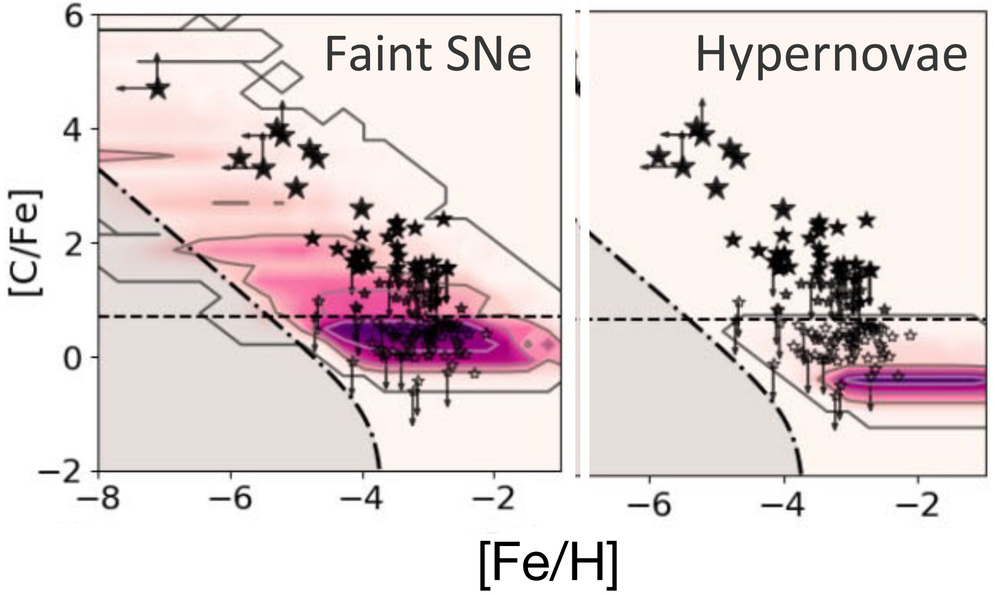
Vanni+2023

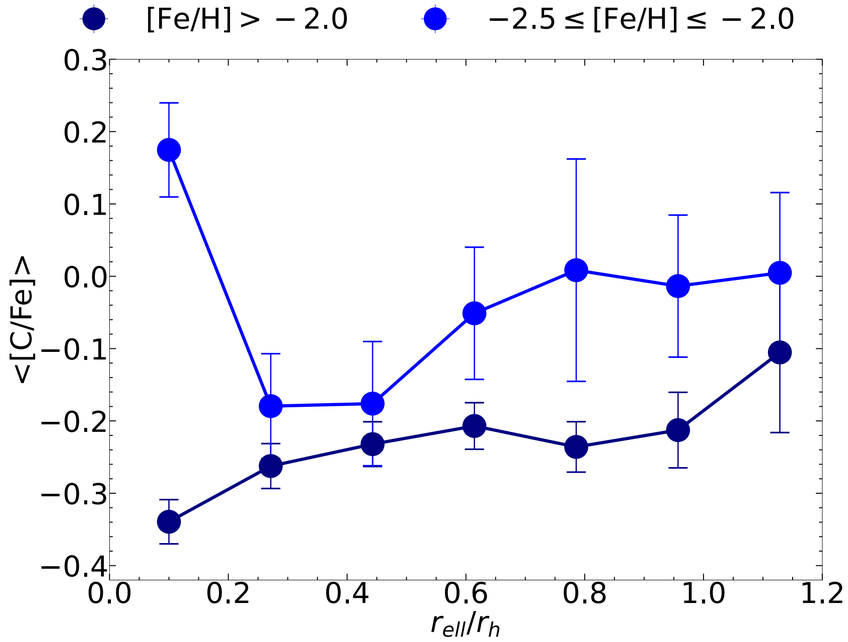


The higher the SNe energy, the lower [C/Fe]

✦Sgr/DGs: Imprints of high-energy SNe events

✦MW building blocks: predominance of faint SNe events?

Carbon gradient in Sagittarius: Hints of SNe Ia in the inner region



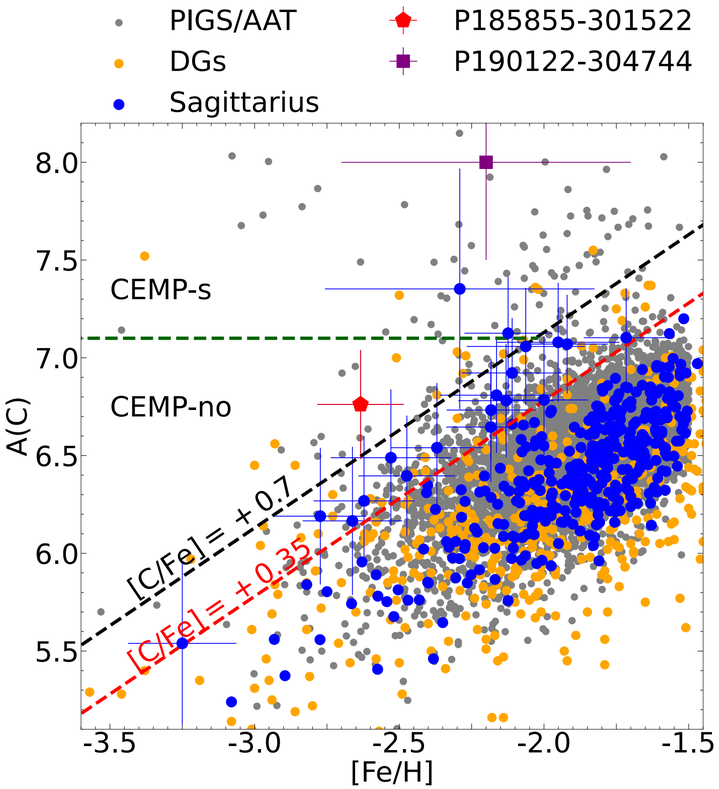
Dearth of CEMP stars in Sgr and dwarf galaxies:

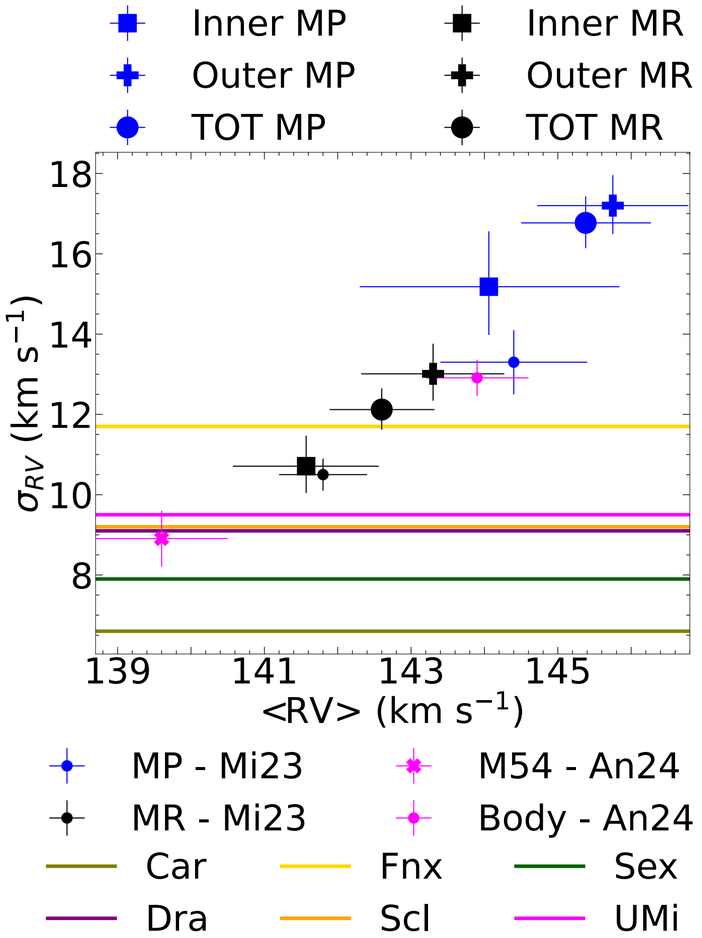
Redefine CEMP according to the average [C/Fe] of a system?

Many more results!

MIKE

AAT





Velocity dispersion changes with metallicity

See also Vitali, […], Sestito +22, 25