

Hunting Na-rich stars through the jungle of N-rich stars in the Galactic Halo

Silvia Martocchia

E. Grebel, A. Savino, C. Lardo, S. Martell, M. Shetrone

SF2A Gaia 2023: “Archéologie Galactique avec Gaia/DR3: un an après”

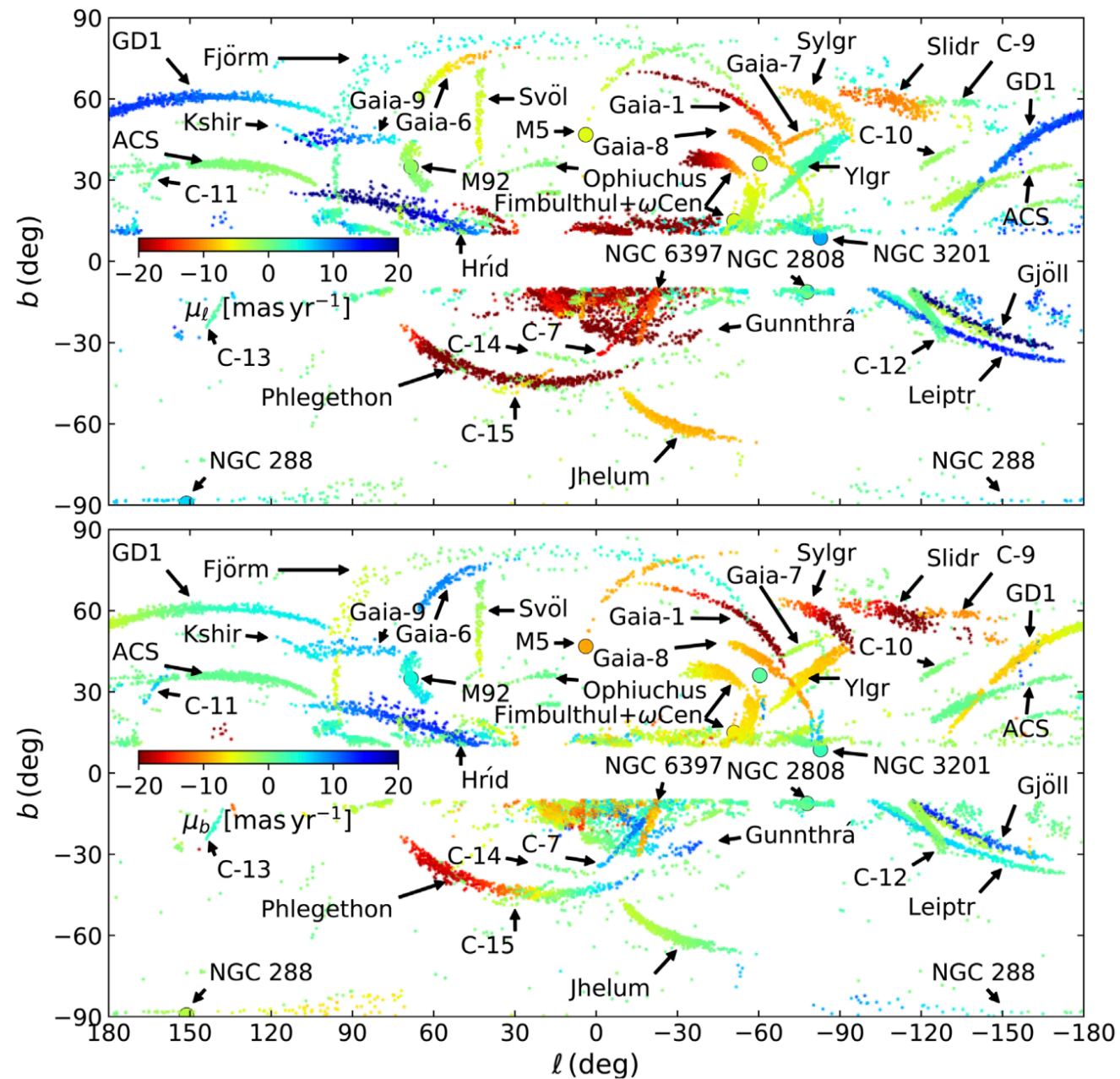


The Galactic Halo

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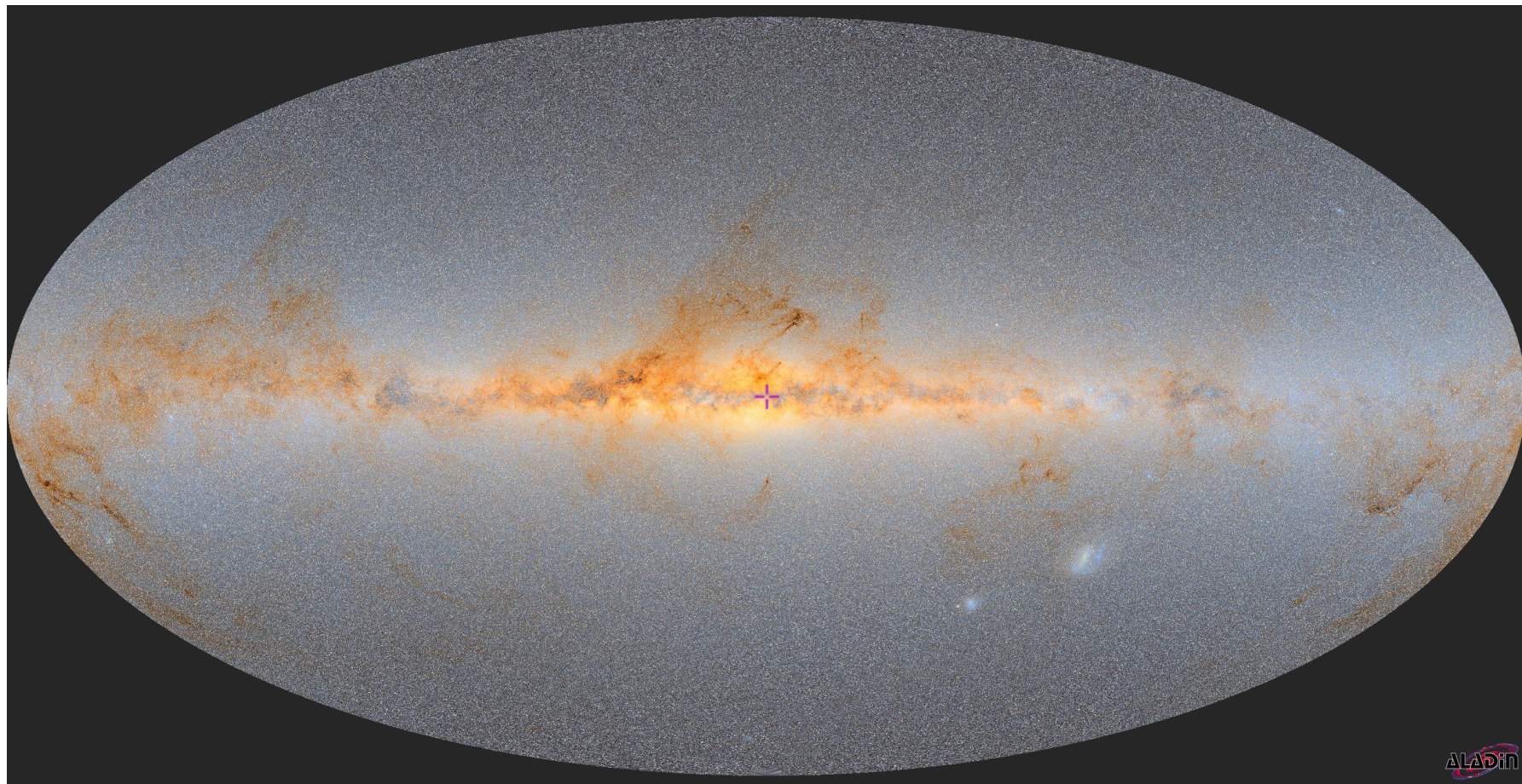
Ibata et al. (2021)

The Galactic Halo

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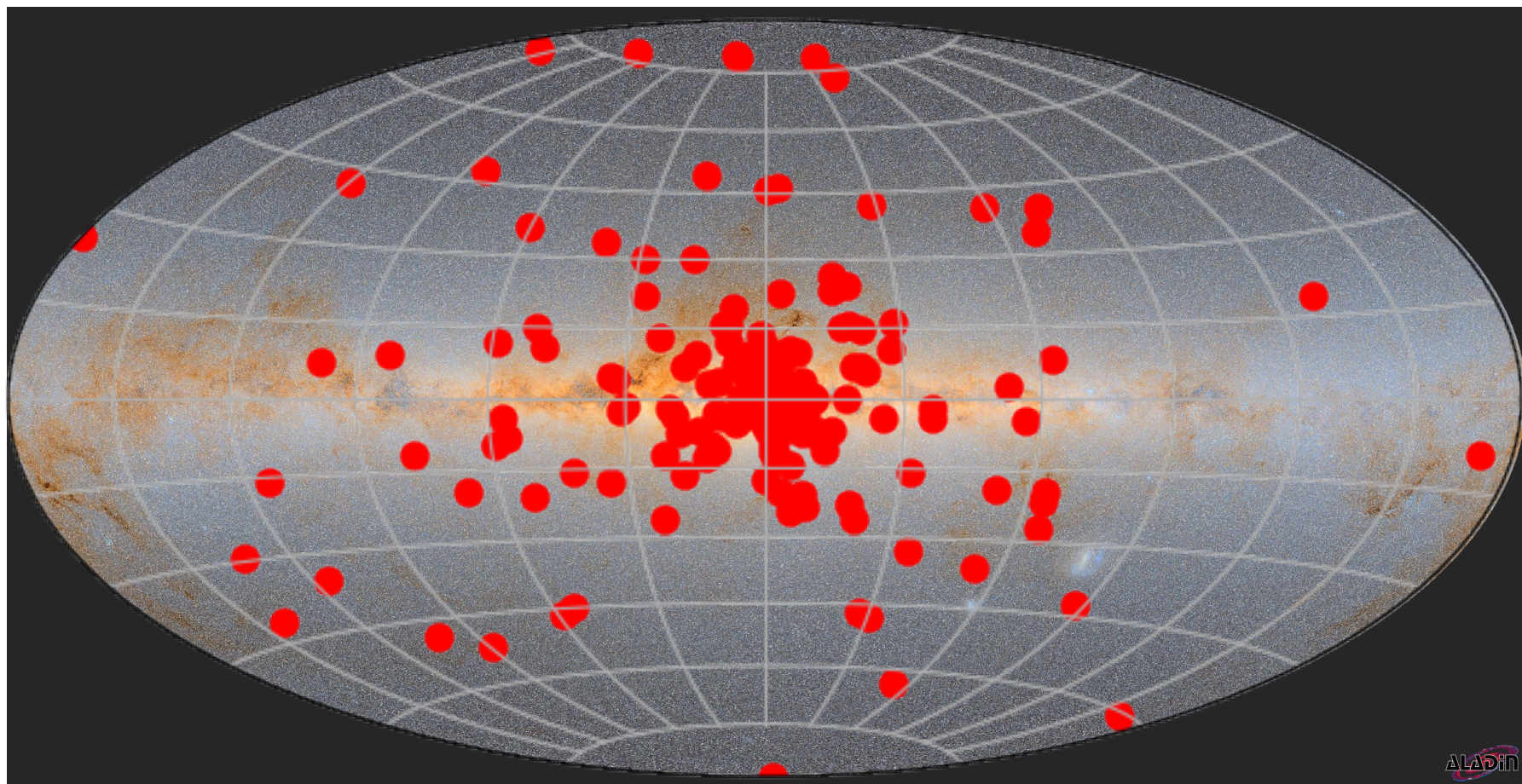


Gaia DR3 flux map, Credits: ESA/Gaia & CDS/Aladin

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- reconstructing origin from stellar populations & stars
- **CHEMICAL & KINEMATICAL** approaches

of stars with globular cluster origin



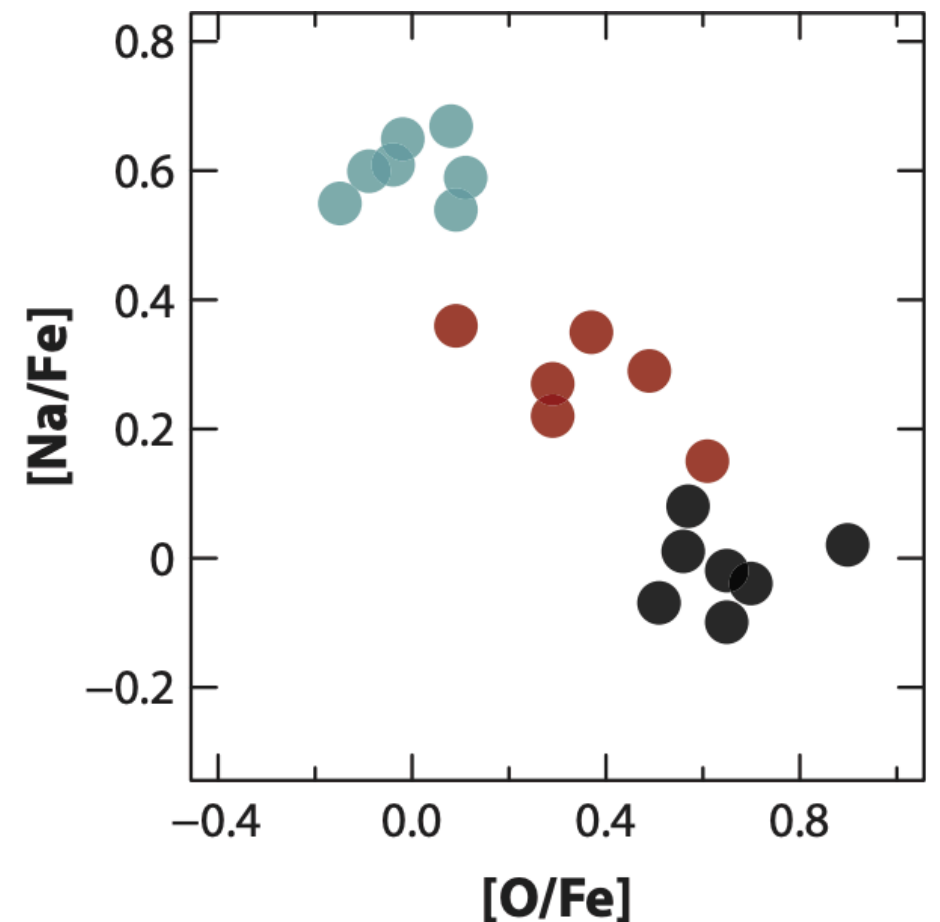
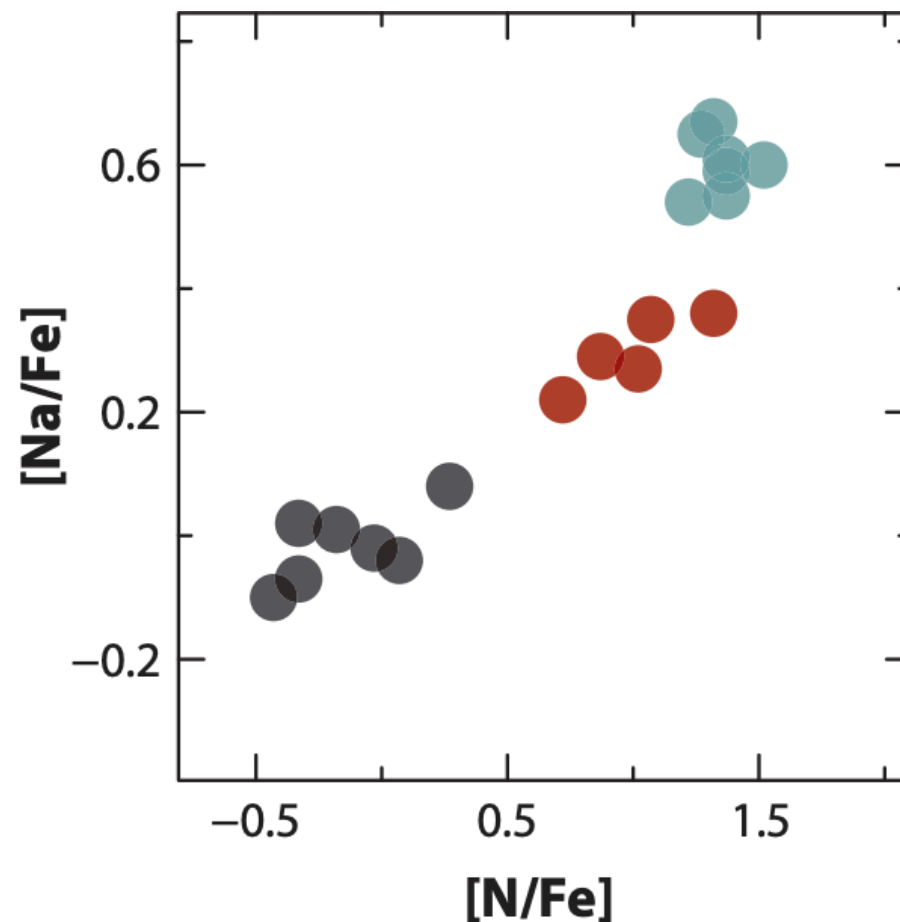
Baumgardt &
Vasiliev 2021

Gaia DR3 flux map, Credits: ESA/Gaia & CDS/Aladin

Chemical Pattern of Globular clusters' stars

Multiple Stellar Populations

Star-to-star
chemical
variations

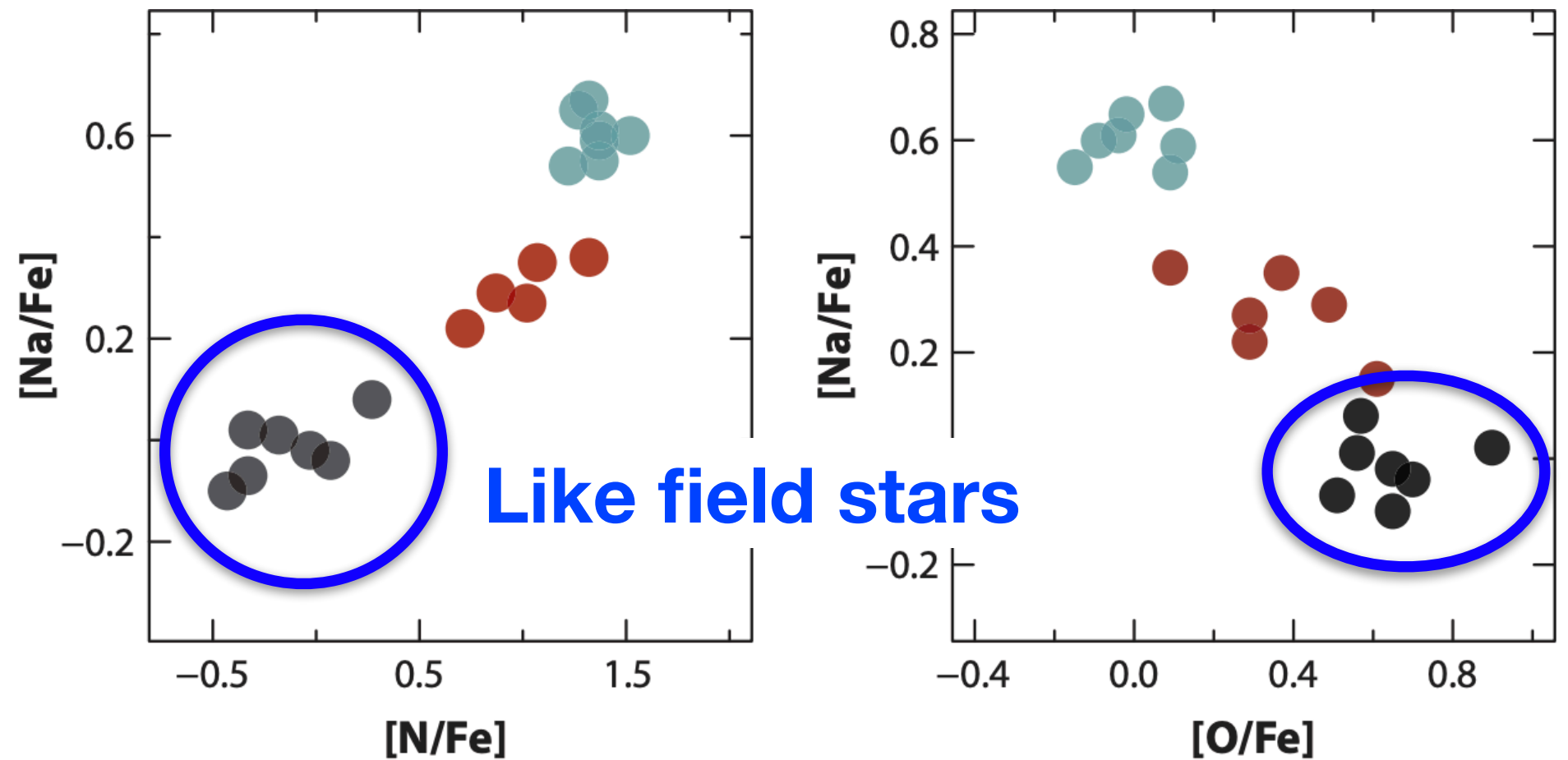


Bastian & Lardo (2018)

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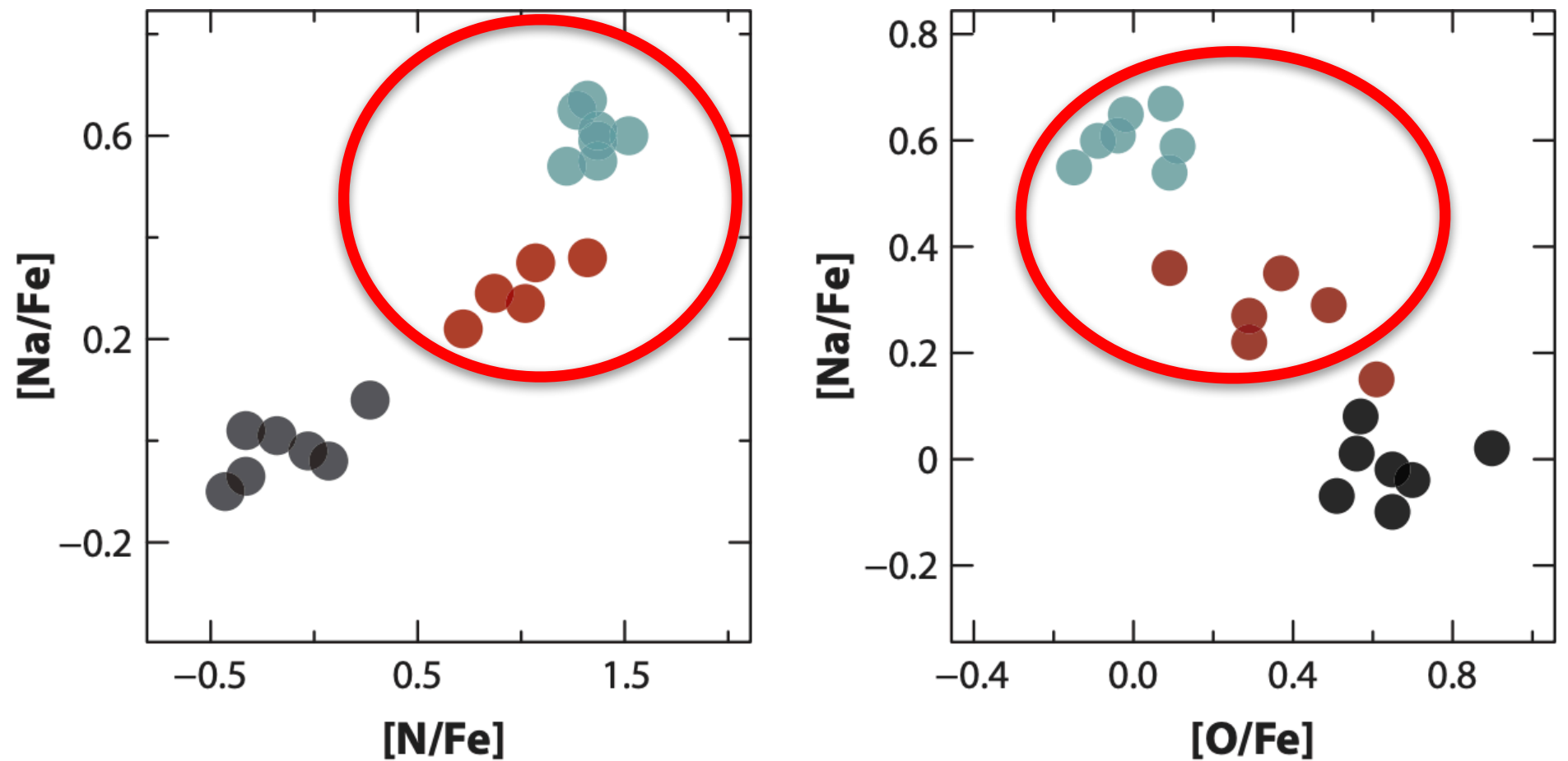
Bastian & Lardo (2018)

Chemical Pattern of Globular clusters' stars

Multiple Stellar Populations

“Anomalous”

Star-to-star
chemical
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Bastian & Lardo (2018)

Chemical Pattern of Globular clusters' stars

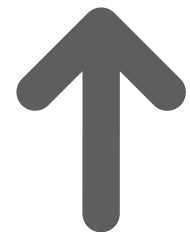
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N

Na

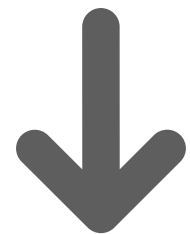
Al



C

O

Mg



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 - (bulge-> e.g. Schiavon et al. 2017)

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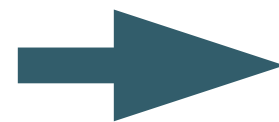
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Mg, Al

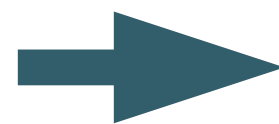
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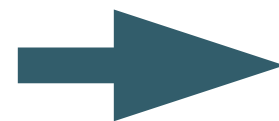
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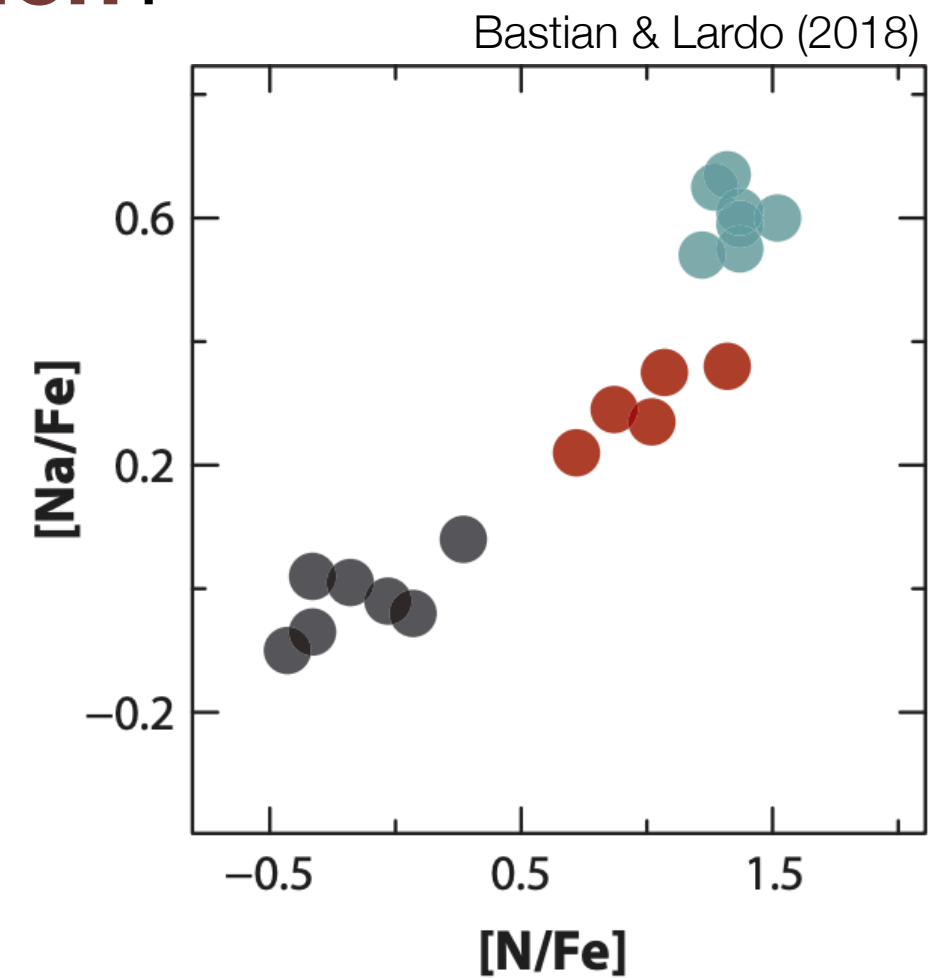


Actions calculation (Gaia!)

(e.g. Savino & Posti 2019, Hanke et al. 2020)

Goals of current study

- How many N-rich stars are also **Na-rich**?



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- Can we kinematically associate these stars to globular clusters?

The sample

- 10 stars observed with VLT/UVES
 - R~70,000
 - ~4700-6900 Å



Credits: ESO

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47 unique stars

The sample

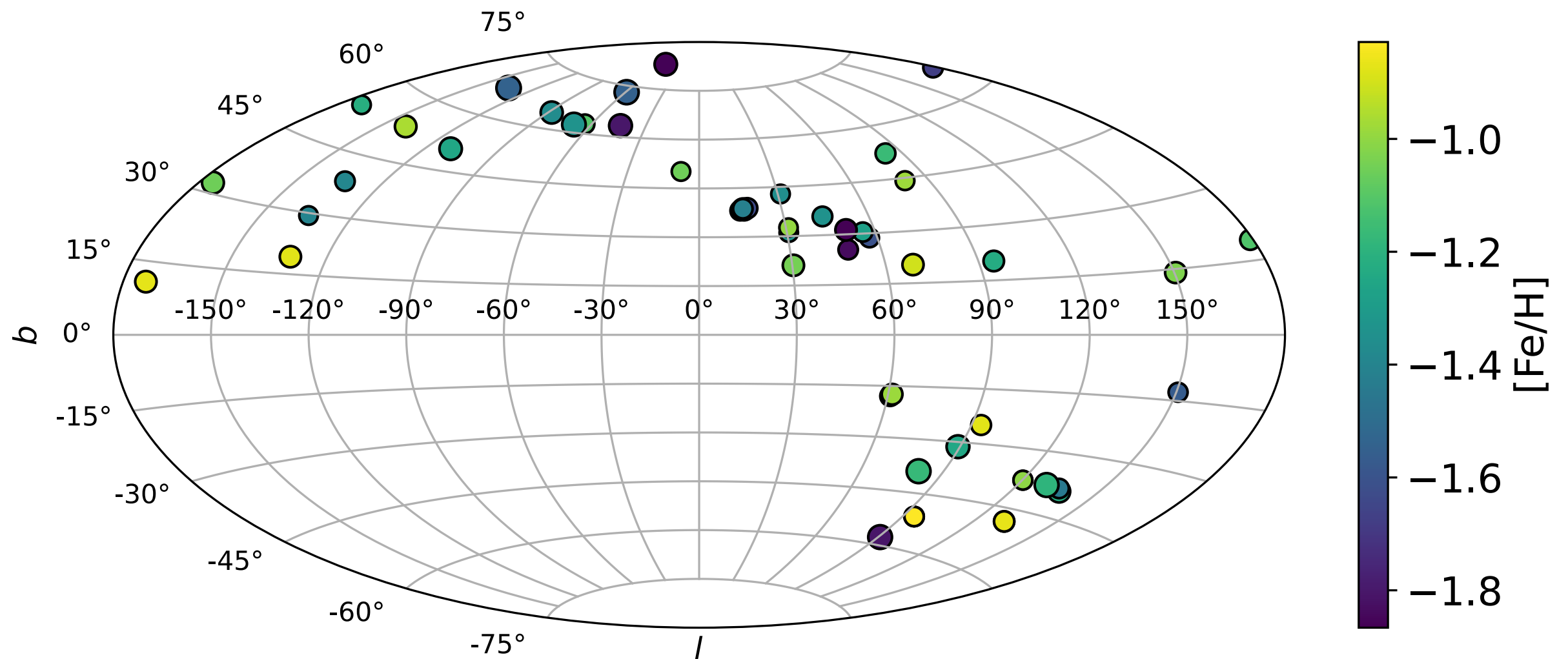
- giants selected from the SDSS SEGUE sample
(Sloan Extension for Galactic Understanding and Exploration)

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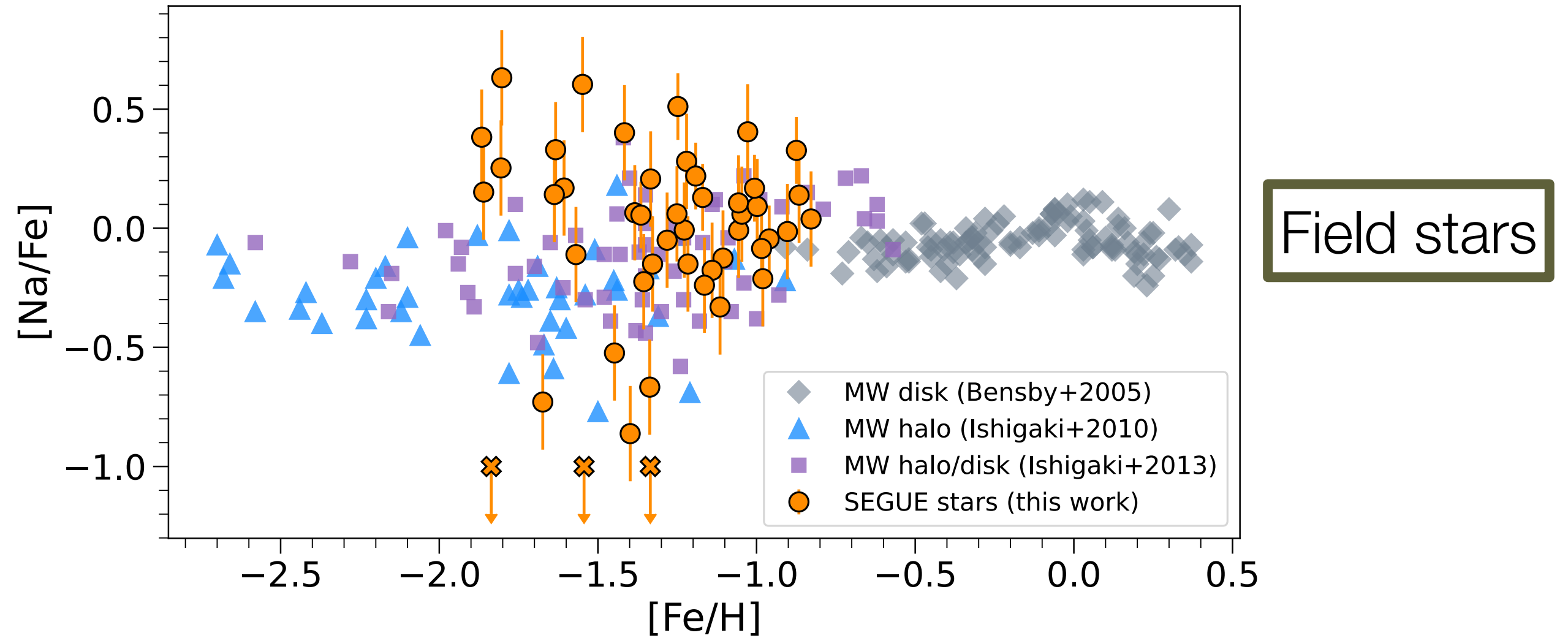


Size=> G mag (Gaia DR3)
From ~14.6 to ~17.2 mag

Results

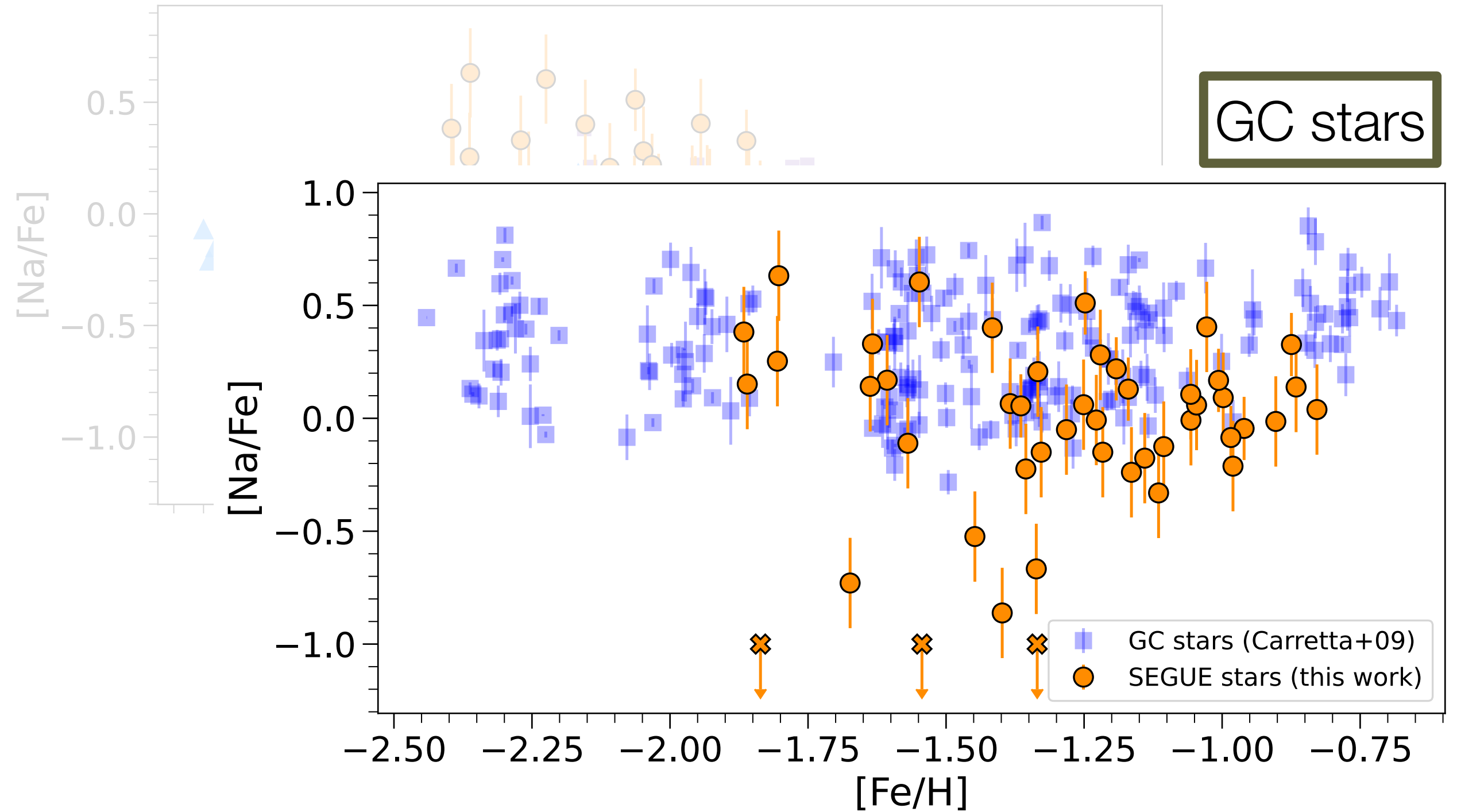
! Preliminary

(Abundances)



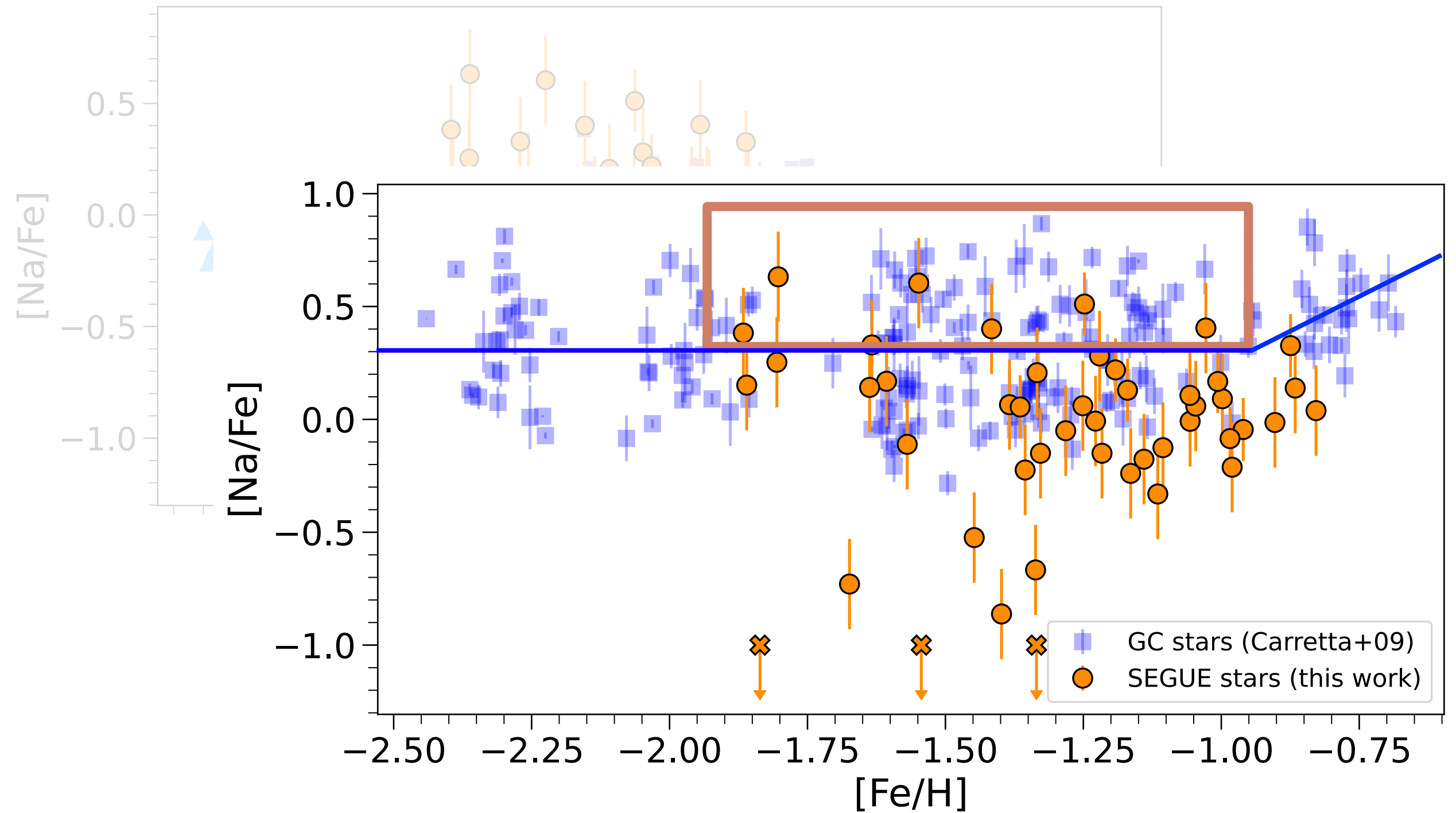
Results

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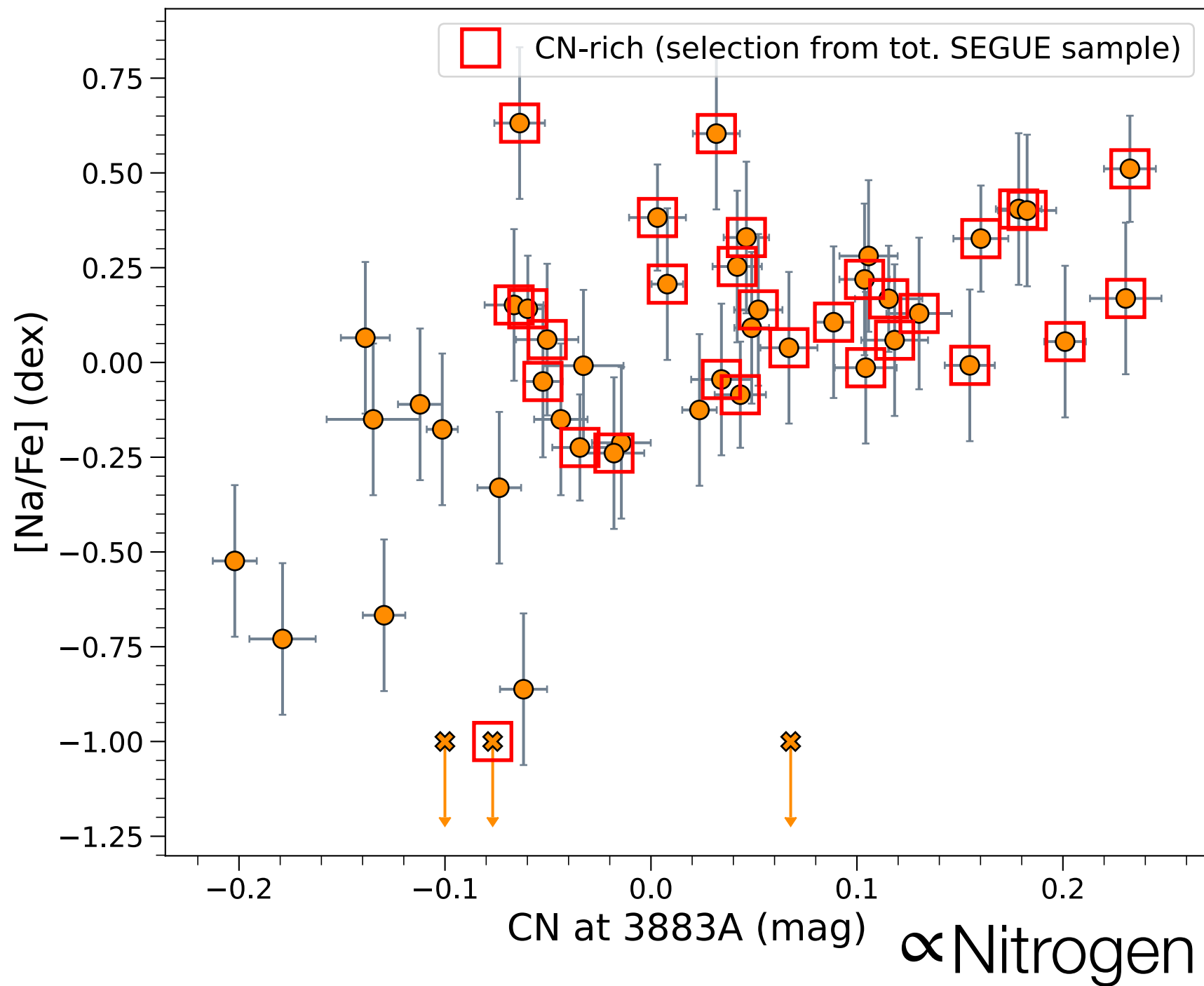
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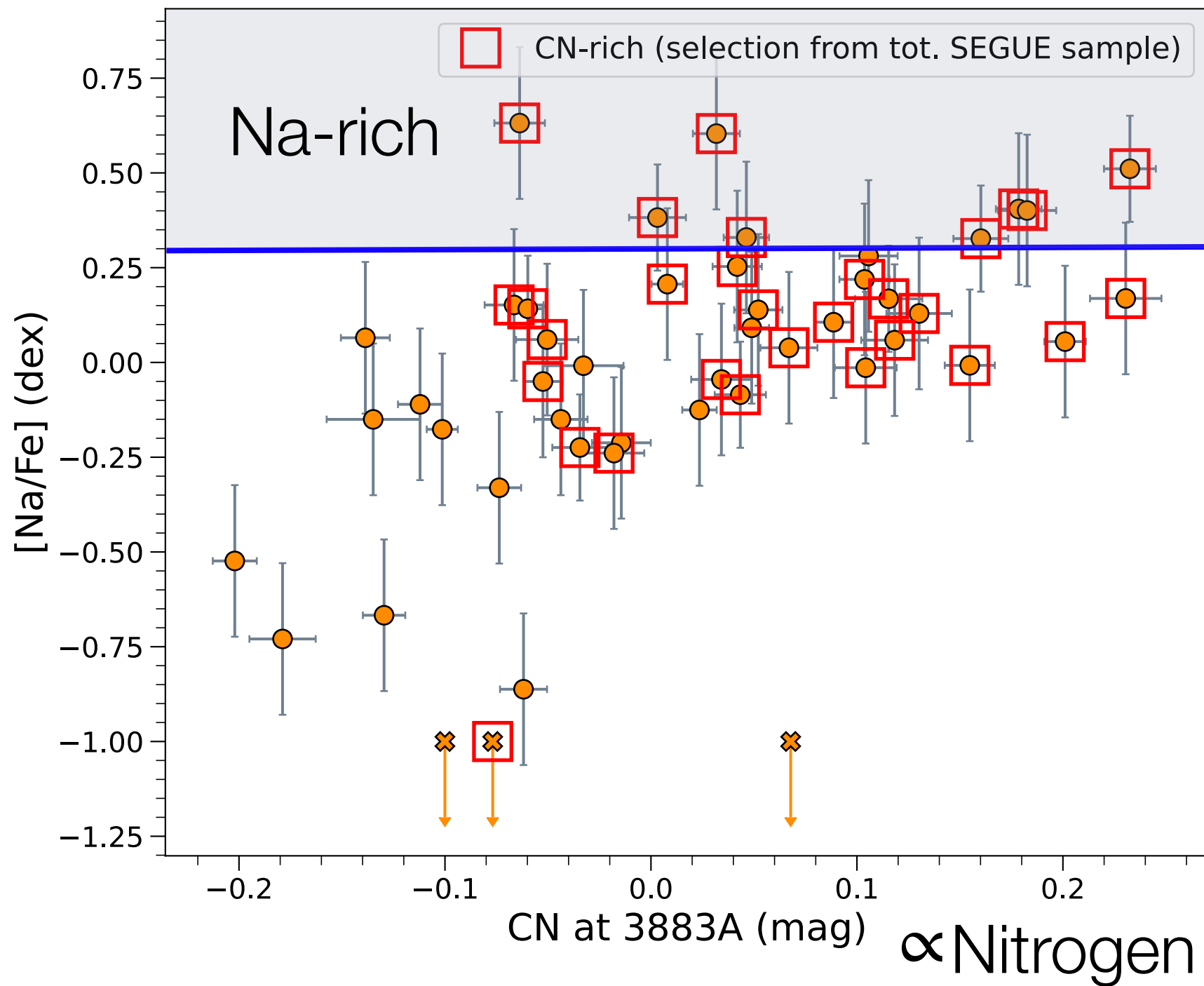
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CN-rich selection as in
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(Also C-poor)

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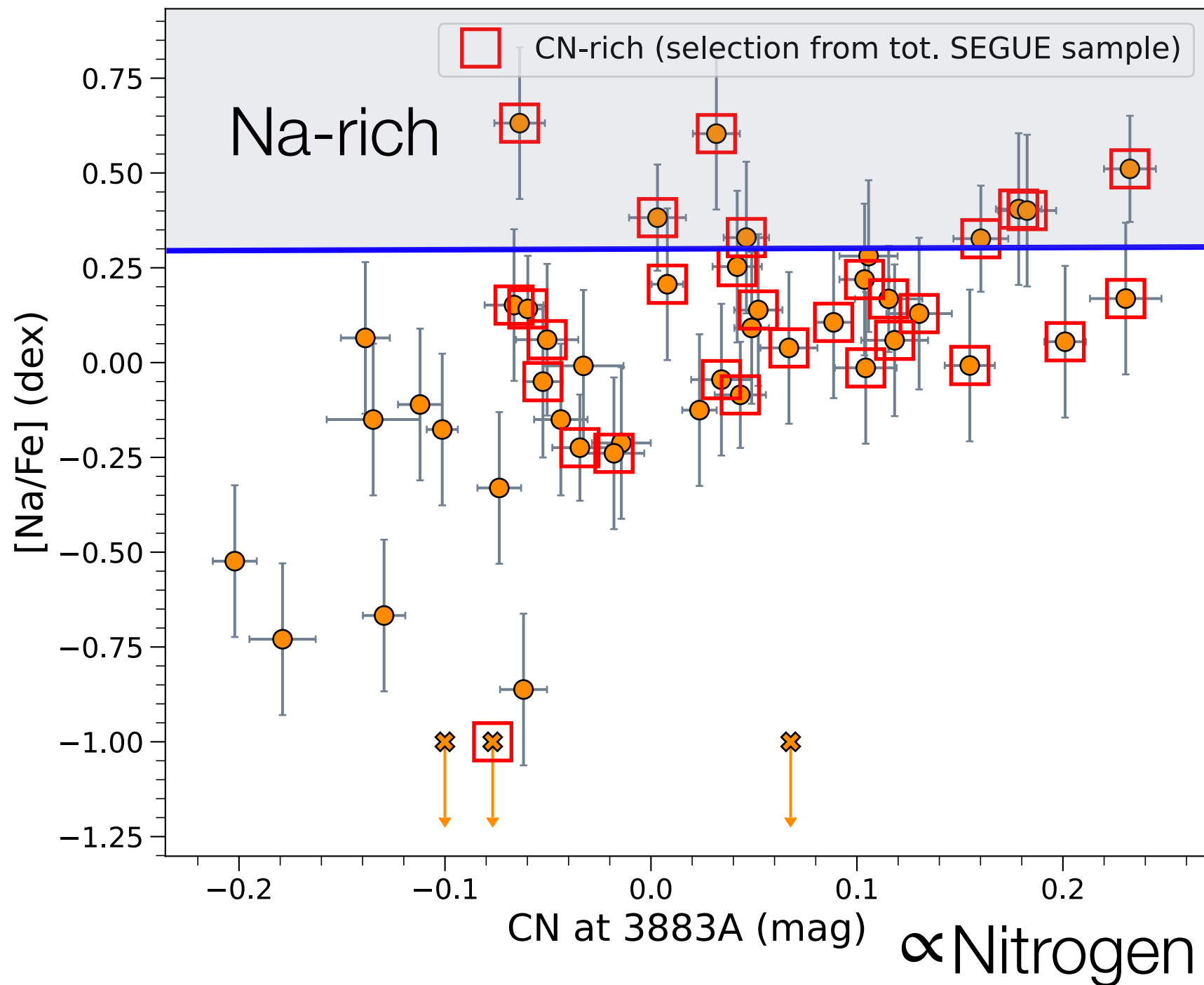
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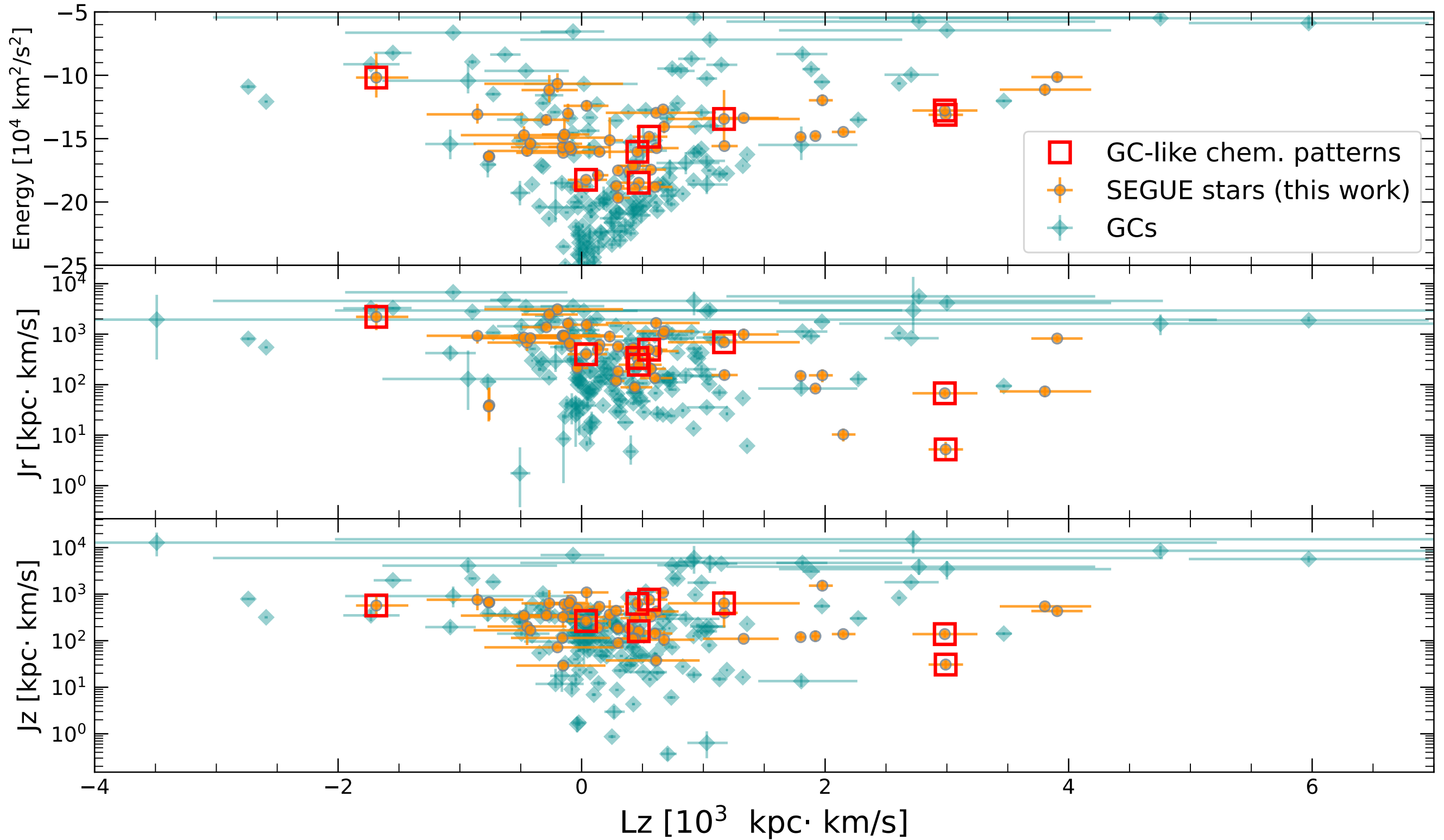
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8 Na-rich / **30** N-rich
($<30\%$)

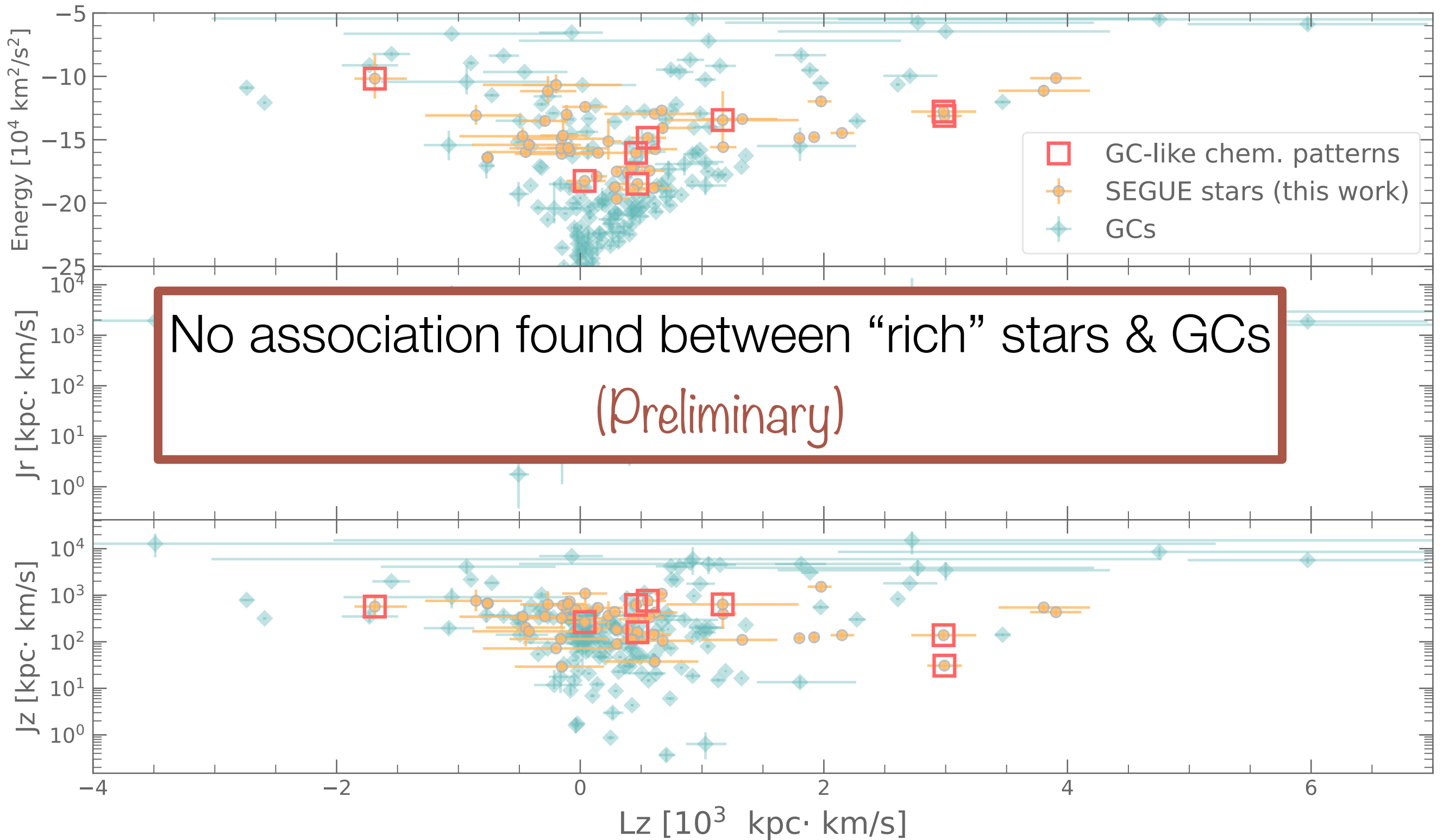
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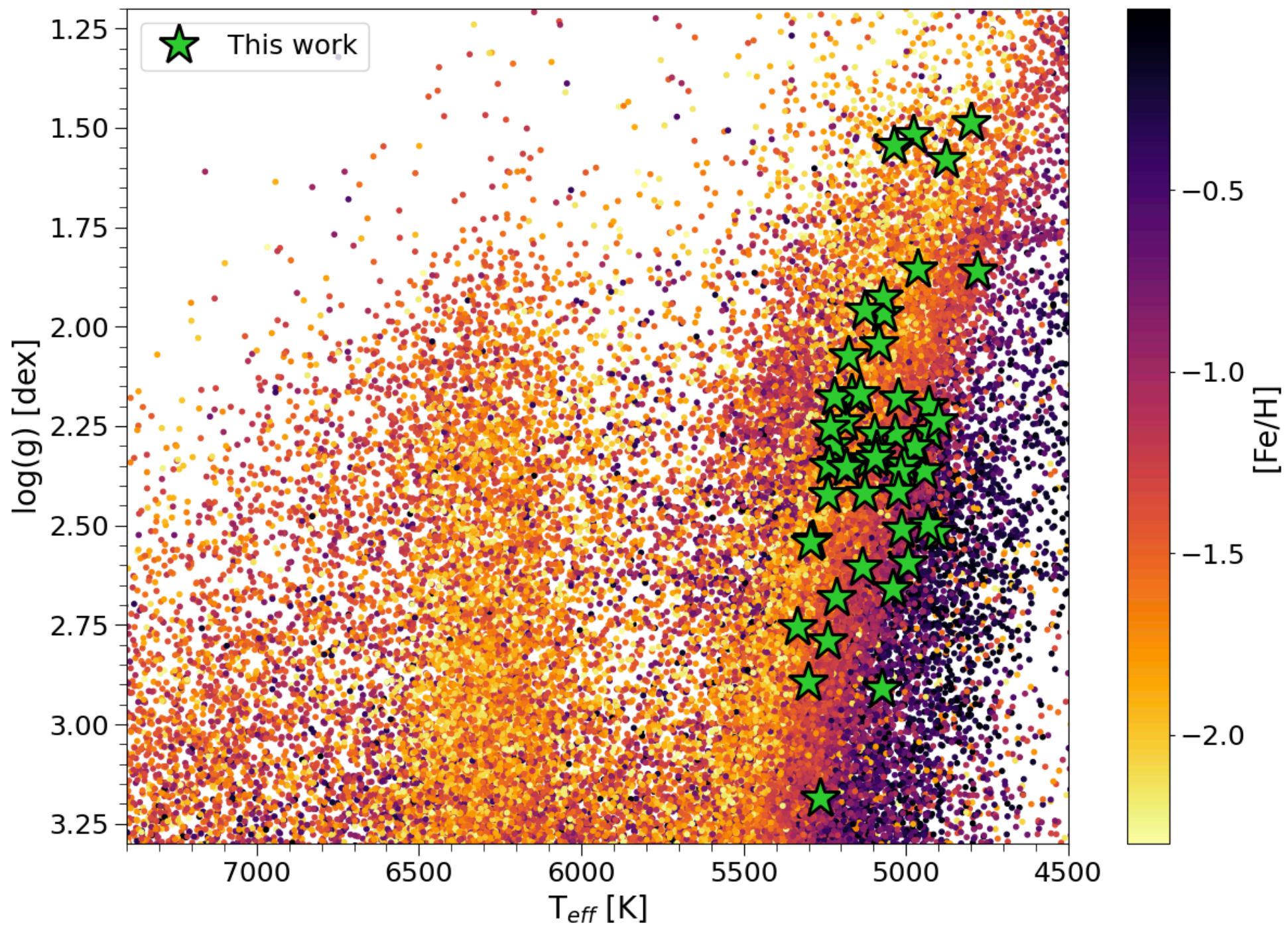
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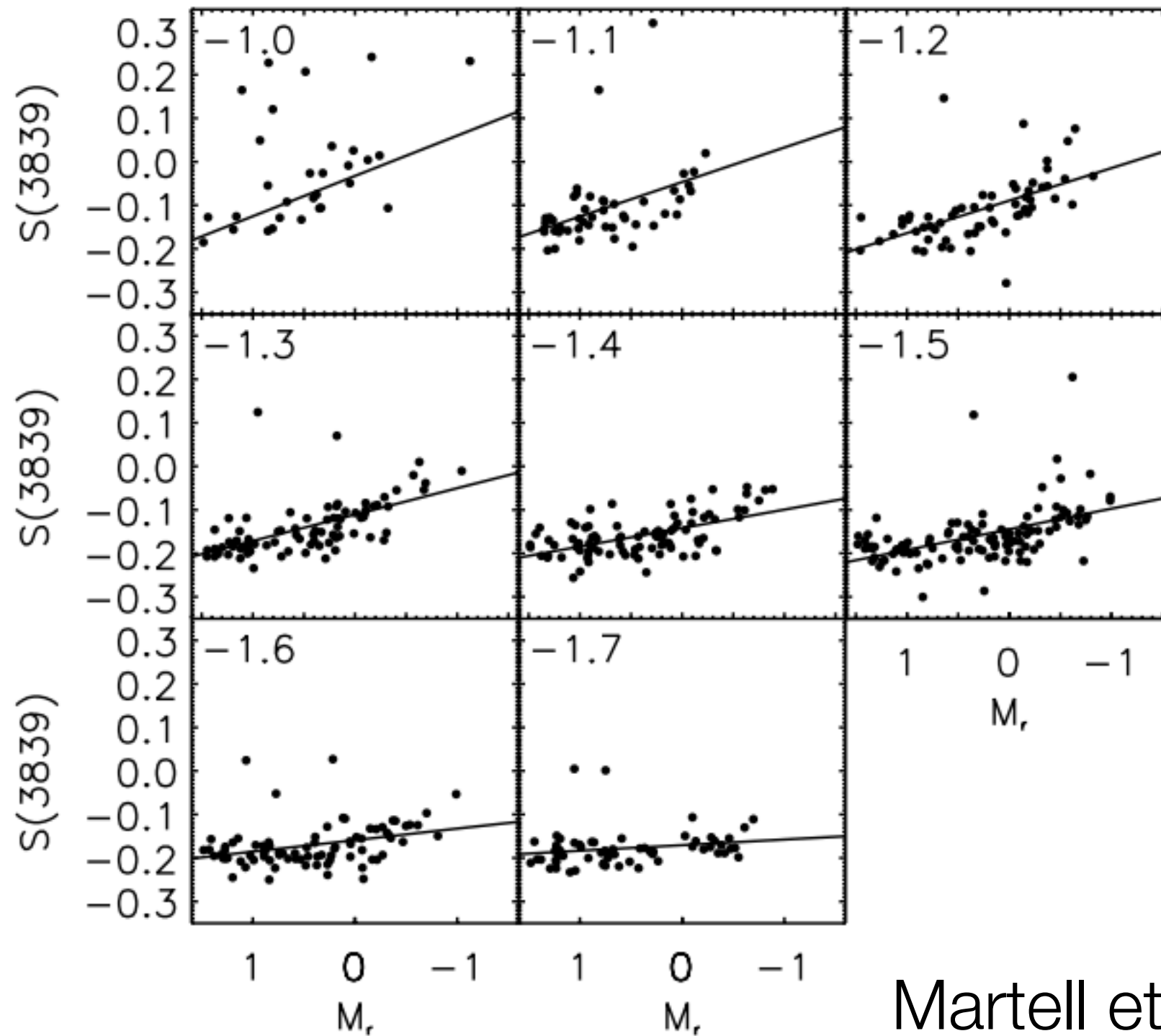
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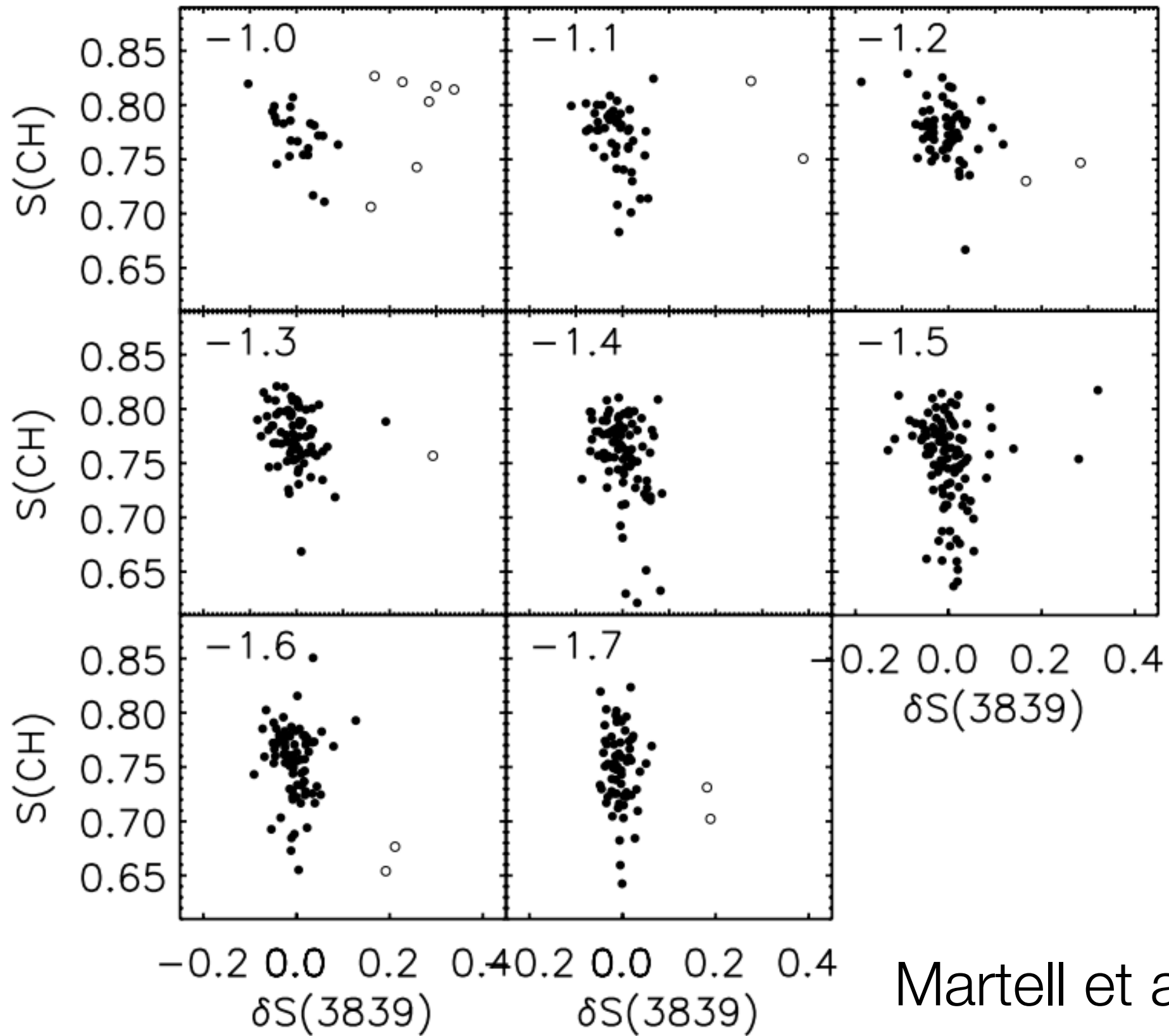
Thank you !

Back up slides





Martell et al. (2011)



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