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► **To cite this version:**

F. Lucertini, L. Monaco, Elisabetta Caffau, Piercarlo Bonifacio, Alessio Mucciarelli. Sulfur abundances in the Galactic bulge and disk. Joint Observatories Kavli Science Forum in Chile (joksfc2022), ESO Santiago, Chile, April 25-29, 2022, Oct 2022, Santiago, Chile. obspm-03812131

**HAL Id: obspm-03812131**

**<https://hal-obspm.ccsd.cnrs.fr/obspm-03812131>**

Submitted on 12 Oct 2022

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# Sulfur abundances

# in the Galactic bulge and disk

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## MOTIVATION

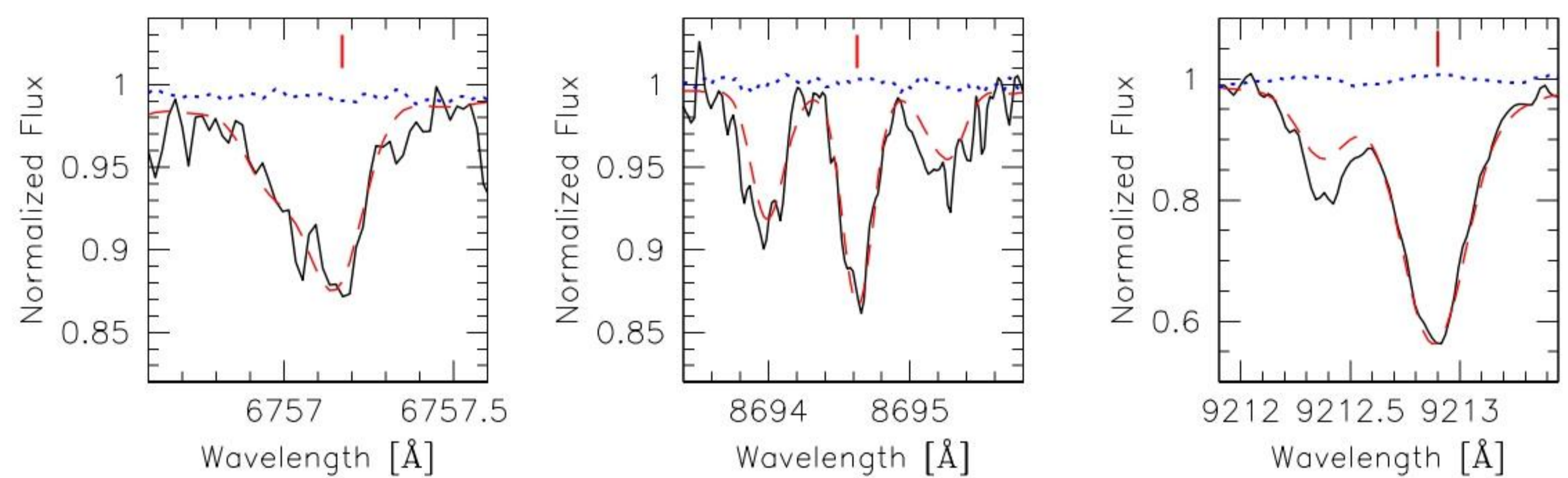
The measurement of  $\alpha$ -element abundances provides a powerful tool for placing constraints on the chemical evolution and star formation history of galaxies. The investigation of sulfur in the Galactic bulge was recently considered for the first time (Griffith+2020). This work aims to improve our knowledge on sulfur behavior in this component of the Milky Way.

## DATA

- Dwarf and sub-giant stars observed during micro-lensing events.
- FLAMES/UVES spectra of 74 Galactic bulge stars.
- FLAMES/UVES spectra of 21 thick-disk stars.
- UVES POP spectra of 30 thin-disk stars.

## METHODS

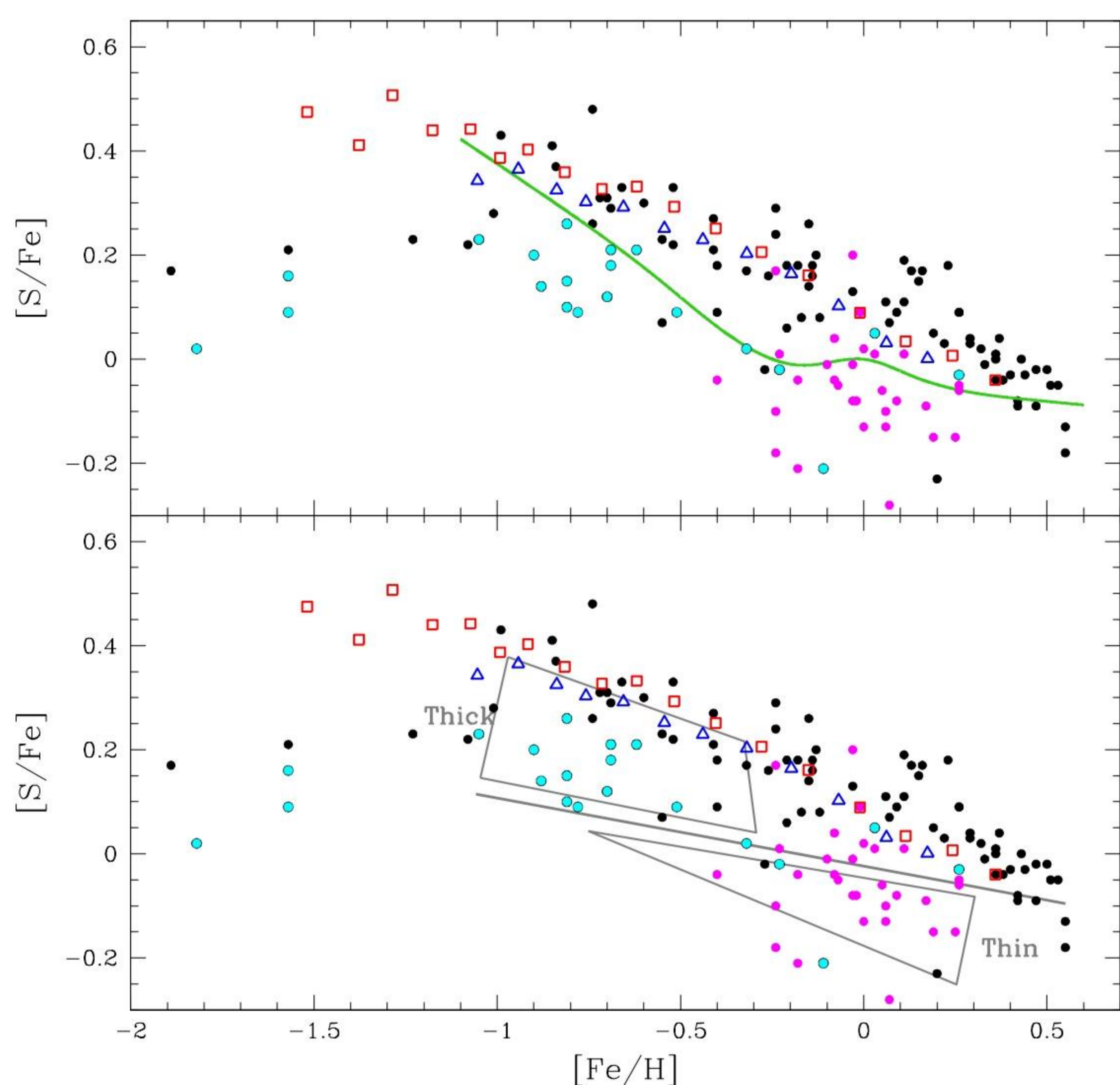
Sulfur abundances were derived from multiplets 8 (675 nm, left panel), 6 (869 nm, middle panel) and 1 (920 nm, right panel) by spectroscopy or line equivalent widths.



- Observed spectrum of the bulge star OGLE-2014-BLG-1418
- - - Synthetic spectrum best fit
- ⋯ Telluric spectrum

## RESULTS

$[S/Fe]_{NLTE}$  versus  $[Fe/H]$  diagram



This work:

- Galactic bulge stars
- thick-disk stars
- thin-disk stars

Literature:

- median trend for bulge stars from Griffith+2020
- △ median trend for thick-disk stars from Griffith+2020
- Duffau+2017 mean trend for thick- and thin-disk stars
- Perdigon+2021

## CONCLUSIONS

- Sulfur behaves like an  $\alpha$ -element in the Galactic bulge.
- Our results for bulge, thick- and thin-disk stars are in agreement within errors with those in the literature.
- We found that the Galactic bulge is sulfur-rich with respect to both the thick- and thin-disks, supporting a more rapid formation and chemical evolution of the Galactic bulge than the disk. On the contrary, Griffith+2020 found similar sulfur behavior for the Galactic bulge and the thick-disk.

### Acknowledgements.

Support for the author F.L. is provided by CONICYT-PFCHA/Doctorado Nacional año 2020-folio 21200677. E.C. and P.B. acknowledge support from the French National Research Agency (ANR) funded project "Pristine" (ANR-18- CE31-0017).

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 Duffau, S., Caffau, E., Sbordone, L., et al. 2017, A&A, 604, A128  
 Perdigon, J., de Laverny, P., Recio-Blanco, A., et al. 2021, A&A 647, A162



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