Unveiling the origin of the most metal-poor disc stars with SOPHIE@OHP, ESPaDOnS@CFHT, and UVES@VLT

Isaure González Rivera, V. Hill, G. Kordopatis, F. Gran, and the Pristine collaboration

About me

- **2022 - 2025: PhD at Observatoire de la Côte d'Azur, Nice**

  « *Galactic archaeology : tracing the primitive phases of the Milky Way disc with Pristine stars*»

→ Supervised by Vanessa Hill & Georges Kordopatis

→ Galactic stellar populations, chemodynamics, spectroscopy

→ Active member of the *Pristine* survey [Starkenburg+17]

- **2026 - now: ANR PRIMA postdoc at Laboratoire d'Astrophysique de Bordeaux (LAB)**

  « *PRobing the origIns of the Milky WAy's oldest stars* »

→ Advised by Nadège Lagarde

→ Stellar population synthesis models (BGM 2.0), stellar evolution models (STAREVOL), asteroseismology (PLATO)

→ Collaboration with Geneva Observatory (L. Amard, C.Charbonnel)

OBSERVATOIRE DE LA CÔTE D'AZUR

LABORATOIRE D'ASTROPHYSIQUE DE BORDEAUX

PRISTINE

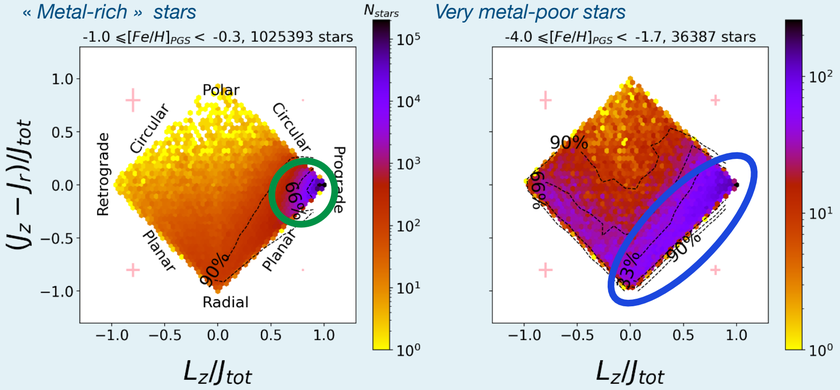
Very metal-poor stars on disc-like orbits?

- **The chemical and kinematical signatures of very metal-poor stars (VMP, [Fe/H] < -2 dex) are crucial to reconstruct the assembly of the Milky Way.**

→ Simulations and observations expect to find the **oldest and most metal-poor** stars in the **bulge** and the **stellar halo**.

→ Recently, many **studies have evidenced an unexpected population of VMP stars on disc-like orbits**, but required statistical confirmation with larger samples.

In González Rivera de La Vernhe+24, we showed that **this population exists, using 36,000 VMP stars from *Pristine*!**



Thin disc area

Prograde-planar overdensity = disc-like

The origin of the earliest disc stars

- **From the kinematical properties of VMP disc-like stars, we cannot fully conclude whether they belong to a disc or a halo component. We need chemistry!**

→ We **lack large-scale spectroscopic studies** for these stars.

→ We observed **90 giant stars with SOPHIE@OHP, ESPaDOnS@CFHT, and UVES@VLT!**

→ Our selection was made on **chemodynamical** criteria to target the **metal-poor tail of the thin disc** and the **most metal-poor disc-like stars** (i.e., prograde-planar).

González Rivera de La Vernhe+26 a & b, to be subm.!

- Analysis of 20+ chemical species in 4 nucleosynthetic channels
- Lower [Fe/H] limit of the thin disc
- *In/ex situ* nature of « primitive » disc stars

Want to know more?
Check out my poster!

Or get in touch:

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