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Where's Waldo? Unveiling a metal-poor extension of the Milky Way thin disc with Pristine-Gaia- synthetic (poster pitch)

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Our understanding of the Milky Way's formation history can be refined by analyzing the information encoded in its oldest stellar populations, typically their chemical composition and orbital motion. Having access to such properties is valuable to depict a larger picture of the earliest stages of galactic formation. With the rise of Gaia, an orbital characterization of the different components of our Galaxy has been built over the years, leading to the discovery of various substructures questioning the formation processes at stake.

In that context, following previous work (Fernández-Alvar et al. 2021), we studied the presence of a metal-poor extension of the thin disc, using photometric metallicities from the Pristine survey (Starkenburg et al. 2017). Combining Gaia astrometry with Pristine photometry, we recovered two stellar populations at $-2 <$ [Fe/H] $<$ -1.5 : one slow-rotating (halo-like) and one fast-rotating (thin disc-like) in the MW anticentre using Gaussian mixture models coupled with a Markov-Chain-Monte-Carlo approach. We pursued our investigation with the upcoming Pristine-Gaia-synthetic catalog (Martin et al. 2023, in prep.), which gathers 1.7 million metal-poor stars with metallicities inferred from BP/RP spectrophotometry.

Our aim is to make use of this statistically significant catalog to characterize the kinematic behavior of the metal-poor MW population in a larger field of view. In this talk, I will present some preliminary results investigating the rotating metal-poor Milky Way using 3D kinematics of this all-sky sample.

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