

# The RR Lyrae in the disc as an interesting GAIA NIR scientific case.

*Wednesday, 17 January 2024 13:20 (20 minutes)*

In this talk, I will present an interesting scientific case for GAIA NIR regarding the characterization of metal-rich RR Lyrae stars in the stellar disc. While RR Lyrae stars have traditionally been considered old and metal-poor population II stars, it is well known that metal-rich (up to solar values) RR Lyrae stars exist in the solar vicinity. Leveraging GAIA's capabilities (Gaia DR2 and Gaia DR3), we have discovered that these metal-rich RR Lyrae stars are distributed throughout the Galactic disk, extending beyond the Solar neighborhood.

The kinematics of these stars align with a young (less than 5 Gyr) thin-disc population, challenging conventional RR Lyrae formation scenarios. Our research suggests that significant mass-loss events in binary systems could produce a population of metal-rich RR Lyrae stars with ages consistent with the thin-disc populations. However, identifying RR Lyrae stars in binary systems remains a challenge.

In this context, GAIA NIR may be the perfect instrument to increase the number of observed RR Lyrae in the high-extinct regions of the Galactic disc. The combination of photometry and astrometry will be fundamental to characterize such objects and confirm or not the proposed binary formation channel.

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