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Chemical footprints of the Galactic spiral arms revealed by Gaia DR3 (poster pitch, online)

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We map chemical inhomogeneities in the Milky Way's disc out to a distance of ~4 kpc from the Sun, using different samples of bright giant stars in Gaia Data Release 3. The samples are selected using effective temperatures and surface gravities from the GSP-Spec module, and they are expected to trace stellar populations of a different typical age. The cool (old) giants exhibit a relatively smooth radial metallicity gradient, whose slope has an azimuthal dependence. On the other hand, the relatively hotter (and younger) giants present remarkable chemical inhomogeneities in the Galactic disc, which are apparent as three (possibly four) metal-rich elongated features in correspondence with the spiral arms'locations. When projected onto the Galactic radius, those features manifest themselves as statistically significant bumps on top of the observed radial metallicity gradients with amplitudes up to 0.05-0.1 dex, making the assumption of a linear radial decrease not applicable for this sample. The strong correlation between the spiral structure of the Galaxy and the observed chemical pattern in the young sample indicates that the spiral arms might be at the origin of the detected chemical inhomogeneities. In this scenario, the spiral arms would leave a strong signature in the younger stars which progressively disappears when cooler (and older) giants are considered.

Primary authors: POGGIO, Eloisa; RECIO-BLANCO, Alejandra; PALICIO, Pedro Alonso; RE FIORENTIN, Paola; DE LAVERNY, Patrik; DRIMMEL, Ronald; KORDOPATIS, Georges; LATTANZI, Mario G.; SCHULTHEIS, Mathias; SPAGNA, Alessandro; SPITONI, Emanuele

Presenter: POGGIO, Eloisa

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