

Halo Kinematic Streams in the Era of Gaia

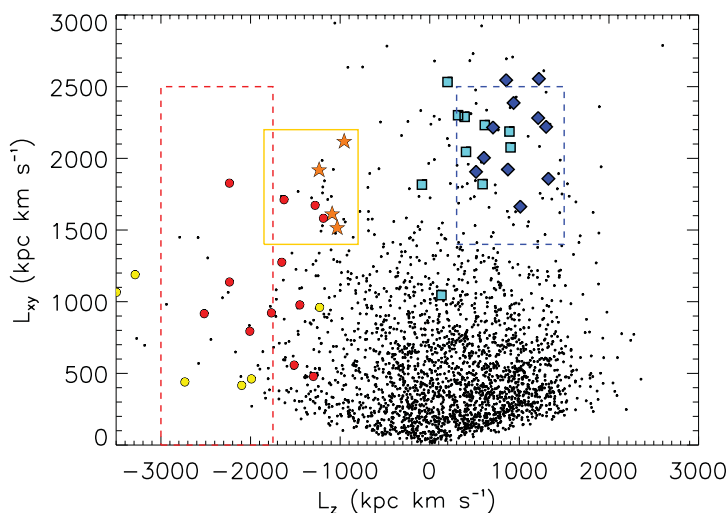
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Abstract. We report on the discovery and characterization of a possibly new signature related to the formation of the Milky Way stellar local halo.

Keywords. Galaxy: formation, halo, kinematics and dynamics

The figure presents the angular momentum distribution of 2417 FGK subdwarfs within 3 kpc of the Sun having $[\text{Fe}/\text{H}] < -1.5$, $|Z| > 1.5$ kpc and selected from the SDSS-GSC-II kinematic Catalog (Re Fiorentin *et al.*, in preparation). Stars identified with symbols other than dots represent the subset of the 5 and recovered by means of cluster analysis in velocity space.



Besides new members of known streams (dashed boxes show the locus of the halo stream known to Helmi *et al.* 1999 and the extremely retrograde substructures found by Kepley *et al.* 2007), the solid box highlights a possibly new kinematic substructure: two sets of stars that are leading and trailing streams tidally torn from the body of a single dwarf galaxy on a high inclination retrograde orbit.

Gauging the impact of observational errors on our simulations (Murante *et al.* 2010), the prospect of highly improved data from the Gaia satellite is extremely promising and the clumpy nature of the stellar local halo will be revealed.

References

- Helmi, A., White, S. D. M., de Zeeuw, P. T., & Zhao, H. S. 1999, *Nature*, 402, 53
- Kepley, A. A., Morrison, H. L., Helmi, A., *et al.* 2007, *AJ*, 134, 1579
- Murante, G., Poggio, E., Curir, A., & Villalobos, A. 2010, *ApJ*, 716, L115