



PHYSICS AND ASTRONOMY COLLOQUIUM

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The Stellar Metallicity Distribution Function of the Galactic Halo from SDSS Photometry

Abstract

I describe an exploration of the stellar metallicity distribution function of the Galactic halo derived from SDSS ugriz photometry. Our effort is based on estimated distances and metallicities for individual main-sequence stars in the multiply scanned SDSS Stripe 82, at heliocentric distances in the range 5 -- 8 kpc. The in-situ photometric metallicity distribution has a shape that matches that of the kinematically-selected local halo stars from Ryan and Norris (1991). We also examine independent kinematic information from proper-motion measurements for high Galactic latitude stars in our photometric sample. We find that stars with retrograde rotation in the rest frame of the Galaxy are generally more metal poor than those exhibiting prograde rotation.

These results are consistent with earlier arguments by Carollo et al. (2007) that the halo system comprises at least two overlapping components with differing metallicity, kinematics, and spatial distributions. The observed photometric metallicity distribution and