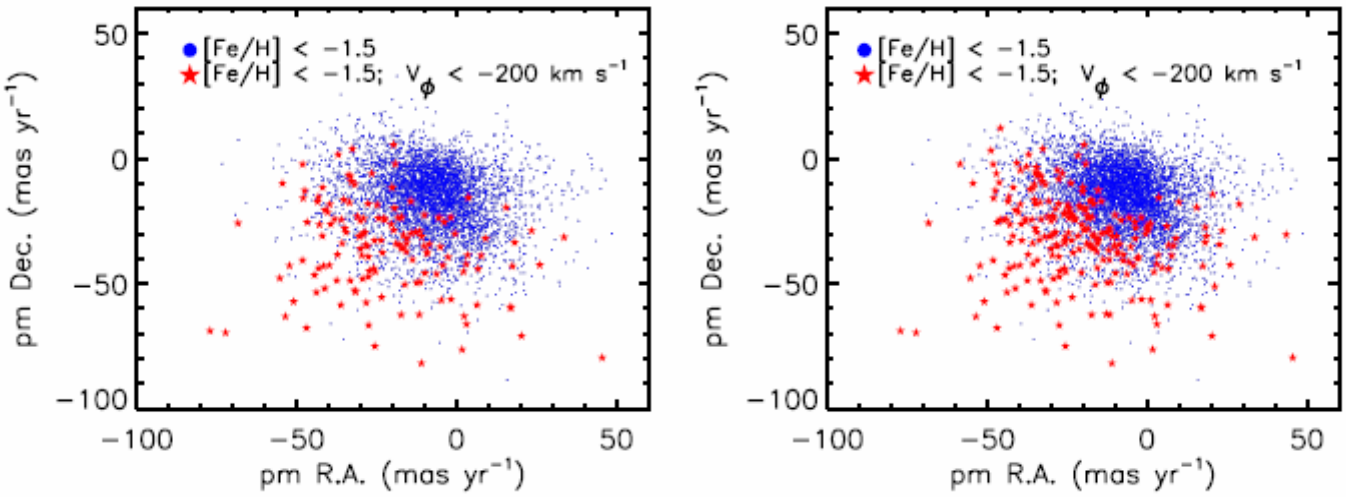
Joint Institute for Nuclear Astrophysics

The Case for the Dual Halo of the Milky Way



Carollo et al. (2007, 2010) have recently resolved the stellar population of the Milky Way halo into at least two distinct components**, an inner halo and an outer halo**. This result has been criticized by Schoenrich et al. (2011), who claim that the retrograde signature associated with the outer halo is due to the adoption of faulty distances. This claim has now been refuted by the work of Beers et al (2012), based on use of the correct absolute magnitude relationship for main-sequence stars as well as revised luminosity classifications for a number of the stars in the Carollo et al. sample. New derivations of the rotational behavior demonstrate that the retrograde signature and high velocity dispersion of the outer-halo population remain.

The figure above shows the distribution of the components of proper motion for stars with [Fe/H] < -1.5 (blue dots), and for the subset of these stars which Carollo et al. (2010) assign to the highly retrograde tail associated with the outer halo (red stars). **The distributions clearly differ, indicating that the retrograde nature is real, and not due to any hypothesized difficulties with assignment of distances.**

Beers et al. summarizes additional lines of evidence for a dual halo, **concluding that the preponderance of evidence strongly rejects the single-halo interpretation.**

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