

The Assembly History of the Galactic Stellar Halo Traced by Carbon-Enhanced Metal-Poor Stars

Tuesday, 4 December 2018 16:38 (1 minute)

We present an analysis of the kinematic properties of the Galactic halo stars, using over 100,000 main sequence turnoff (MSTO) stars observed in Sloan Digital Sky Survey. After separating the MSTO stars into an inner-halo region (IHR) and outer-halo region (OHR), based on the spatial variation of their [C/Fe], we find that stars in the OHR show a clear retrograde motion of -49 km/s and a more spherical distribution, while stars in the IHR exhibit zero net rotation (-3 km/s) with a much more radially biased distribution. Moreover, after classifying carbon-enhanced metal-poor (CEMP) stars among the MSTO sample into CEMP-s and CEMP-no objects by their absolute carbon abundances, we examine the spatial distributions of the fractions of CEMP-no and CEMP-s stars and the kinematics of each sub-class. The CEMP-no stars are the majority sub-class of CEMP stars in the OHR (~65%), and the minority sub-class in the IHR (~44%). The CEMP-no stars in each halo region exhibit slightly higher counter-rotation and a more spherical distribution of orbits than the CEMP-s stars. These distinct characteristics provide strong evidence that numerous low-mass satellite galaxies have donated stars to the OHR, while more-massive dwarf galaxies provided the dominant contribution to the IHR.

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Talk/Poster

Poster

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Session Classification: Poster Short Presentations