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Chemical Abundances and Globular Clusters of Milky Way dwarf Galaxies

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The satellite galaxies around our Milky Way (MW) are excellent laboratories for studying stellar evolution and galaxy evolution under different environments, even testing various cosmological models. Recently, we derived up to 13 chemical abundances in several MW satellite galaxies (e.g., Fnx, Scl) using high-resolution APOGEE spectra. Particularly, $[\text{Si}/\text{Fe}]$ vs. $[\text{Fe}/\text{H}]$ graph shows patterns related to galaxy stellar mass, indicating its crucial role in galaxy evolution. With our measured abundances, we found that Scl has a bottom-light IMF, which may have a significant impact on the inferred stellar mass of dwarf galaxies. On the other hand, we found that in-situ globular clusters (GCs) have higher primordial $[\text{Al}/\text{Fe}]$ ratios compared to accreted GCs at $[\text{Fe}/\text{H}] > -1.5$. This chemical-driven GC classification is promising for future Galactic archaeology.

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