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Chemical evolution in the building blocks of the Milky Way

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Galaxy mergers and accretions are a fundamental process in galaxy evolution. In the Milky Way, we can identify signatures of past galaxy accretion events as kinematic substructures, allowing us to characterize the property of each accreted galaxy and, potentially, its impact on the Milky Way's evolution. We here characterize the chemical properties of stars belonging to kinematic substructures over 13 elements based on high-quality spectra and differential abundance analysis, which minimizes systematic uncertainties. With the detailed elemental abundance, we first confirm that each kinematic substructure needs an independent progenitor from differences in chemical abundance. We then show that less prominent progenitors tend to show stronger signatures of chemical enrichments by type Ia supernovae, indicating that their star formations took place over a long time. We will finally present future prospects and requirements to isolate debris of individual accreted galaxies based on kinematics and chemical abundances.

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