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First Time Galactic Archaeology

In this conference, we generally introduce Galactic Archaeology (hereafter GA) and briefly present our astronomical studies based on the GA technique. Individual stars that widely spread in a stellar halo around a galaxy, which is the oldest component in the universe, have maintained past information of the host galaxy. Therefore, we are able to understand how a galaxy formed by closely investigating old halo stars in galaxies that are near enough to resolve the stellar populations with current optical/infrared telescopes.

In accordance with GA technique, we investigate the stellar halos of nearby spiral galaxies such as the Andromeda galaxy and NGC55, to reveal how and when the galaxies formed, using the wide-field imager, Suprime-Cam on the Subaru telescope. Consequently, we have found that there are some inhomogeneous stellar overdense substructures in the halos, suggesting that a galaxy has hierarchically formed through many merging events with smaller dwarf galaxies.

References

- (1) Tanaka et al. 2010, The Astrophysical Journal, 708, 1168
- (2) Tanaka et al. 2011, The Astrophysical Journal, 738, 150

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