

Z103a Subaru Near-Field Cosmology survey with HSC and PFS

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Over the last decade, wide-field resolved star studies have shown a remarkable variety of stellar substructures in the halos of the Milky Way and M31, attesting to the fact that accretions have played an essential role in shaping their evolution. Pushing these studies to galaxy systems beyond the Local Group is crucial to increasing sample size and deriving representative trends.

We introduce the Subaru Near-Field Cosmology survey with HSC and PFS, targeting several Local Volume disk galaxies to elucidate the dependence of stellar halo properties. The resolved stellar photometries with Subaru/HSC reached down to 1.5 mag below the RGB tips and covered more than half of R_{vir} of target galaxies, which enabled us to map the stellar halos and discover faint substructures around galaxies. This HSC imagery provides ideal PFS target catalogs of supergiant stars and globular cluster (GC) candidates as tracers of young and old populations at galaxy outskirts. With PFS, we will directly examine the metallicity gradient and dynamics in the outer disks and stellar halos. A significant statistical sample of global chemo-dynamics in these nearby galaxies will provide a comprehensive understanding of disk galaxy formation, together with the detailed PFS-SSP views of the Milky Way and M31. Some of the target galaxies are in galaxy groups, such as the M81 and Sculptor groups. The discovered intra-group GCs in these galaxy groups will also be studied to trace the dynamics of old stellar components in the intra-group field, which may be stripped from the main body of galaxies by past tidal interactions.