Z104a   The nature of M31/M33 stellar halos explored by Subaru/HSC & PFS survey

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One of the major goals in the Local Group studies with Subaru is to understand the nature of stellar halos of the Andromeda system (M31 and M33). Thanks to the combination of Subaru/HSC & PFS, we can investigate the global properties of each stellar halo, which is a faint and vast structure, in detail. In this talk, we present the M31/M33 halo survey using Subaru/HSC and PFS.

Analysis with HSC/*NB515* has allowed us to identify the M31/M33 halo stars with an accuracy of over 90%. Owing to this, we can study the properties of the M31 halo (e.g., metallicity distribution and surface brightness profile) over a range of more than 100 kpc, and detect the M33 outer halo up to 20 kpc, minimizing the effect of contaminating foreground Galactic stars. The HSC data also provides an ideal targets for PFS observations.

PFS allows us to directly study the comprehensive chemodynamic properties of these halos. The chemical information will provide a key to understanding the galaxy formation process, such as spatially mixing substructures and metallicity gradient in these halos. In addition, the kinematical information can place significant constraints on the orbits of stellar systems that have accreted to these stellar halos.