Contribution ID: **54** Type: **Dwarf galaxies & Galactic chemical evolution**

Statistical properties of substructures around MW-size halos and their implications for the formation of stellar streams

Friday, 7 December 2018 14:50 (10 minutes)

Substructures such as stellar streams are the important tracers that record how the host halos accreted progenitor galaxies. To investigate the relationship between structural properties of substructures and orbits of their progenitors, we combine semi-analytic models with a high-resolution cosmological *N*-body simulation and analyze the statistical properties of substructures around Milky Way size halos. Using'Particle Tagging' method, we embed stellar components in progenitor halos and trace the phase-space distribution of the substructures down to z=0. Additionally, we use a semi-analytic model to assign stellar masses to the progenitors and successfully reproduce the stellar mass function of observed dwarf galaxies around the Milky Way and the Andromeda galaxy. We characterize structural properties of the substructures such as length and thinness at z=0 and explore the relationship between them and the orbits of progenitors. We find that the length and thinness of substructures vary smoothly as the redshift when the host halos accrete their progenitors. For substructures observed like streams at z=0, a large part of the progenitors is accreted by their host halos at redshift $0.5 < z < 2$. We also find that the distributions of length and thinness of substructures vary smoothly as pericenter and apocenter of the progenitors.

Affiliation

Chiba University

Talk/Poster

Talk

Primary author: Mr MORINAGA, Yu (Chiba University)

Co-authors: KINJO, Kazuki; TAKANOBU, Kirihara; ISHIYAMA, Tomoaki

Presenter: Mr MORINAGA, Yu (Chiba University)

Session Classification: Dwarf Galaxies