
Morphology and metallicity evolution of the circumgalactic medium

Ting-Wen Lan*¹

¹Kavli IPMU – Japan

Abstract

I will present the morphology and metallicity evolution of the cool circumgalactic medium spanning the redshift range $0.4 < z < 2.5$, probed via the largest metal absorber catalog from the Sloan Digital Sky Survey. We measure the abundances of more than 10 metal elements while constraining the physical conditions of the circumgalactic gas. Our results show that (1) the metallicity of the circumgalactic gas evolves consistently with the metal production of the Universe and reaches the solar value at redshift ~ 1 ; (2) the metals are carried by small dense clouds with the sizes ~ 10 pc. These findings uncover a new picture: galaxies are surrounded by $\sim 10^6$ metal-enriched gas clouds—a non-negligible amount revealed for the first time.

*Speaker