

**R29b          NFW Galaxy Profile as a Cosmological Tool**

浅野勝晃 ( 阪大理 )

The profile of Navarro, Frenk, and White (the NFW profile), which was derived from the  $N$ -body simulations of cold dark-matter halos, is a strong candidate for a galaxy or cluster profile. In order to check the usability of the NFW profile as a first approximation of a galaxy model, we studied the characteristic overdensity and scale radius of galaxies by reproducing the image positions and flux ratios of 2-image gravitational lens systems, under the following simple assumptions: the galaxies are spherically symmetric, and stars and external shear do not contribute to the gravitational lens. The scale radii of the lensing galaxies are smaller, and the characteristic overdensities are larger than the predicted value in the  $N$ -body simulations. These results indicate that our assumptions are overly simplified. It may be impossible to simply adopt the NFW profile, which does not include stars, to probe the cosmological parameters or the light propagation in an inhomogeneous universe and so on. If we adopt a softened isothermal profile to the lensing galaxies, the scale radii and the central matter densities agree with models which are derived from other observational results for early-type galaxies and which are independent of gravitational lensing. The isothermal sphere as a first approximation of a galaxy model has no serious problem.