[포ST-17] Proper motion of Galactic globular cluster NGC 104

Eunhyeuk Kim[1], Minsun Kim[2]
[1]*Department of Astronomy, Yonsei University,*
[2]*Korea Astronomy & Space Science Institute*

Globular clusters (GCs) are known to be one of the oldest objects in the Milky Way. Therefore the dynamical informations of GCs are very important to understand the formation and evolution of our Galaxy. Motion of GCs in the halo of Galaxy can be traced by radial velocities of individual stars and proper motions of GCs. Measuring the radial velocities of stars in GCs has been challenging for decades because the brightness of stars (even for the brightest stars) in GCs are too faint (V>14) to measure the radial velocities. The available large telescopes (D>4m) enable us to observe the spectra of stars in the red giant branch of GCs, and it is now more plausible to measure the radial velocities of stars in GCs. On the contrary it is still very difficult to measure the sky-projected two-dimensional motion of GCs in Galaxy even with the large telescopes because the distance to GCs is quite large (~10kpc) compared to the spatial resolution of present-day large ground-based telescopes. Instruments on-board Hubble Space Telescope are ideal to study the proper motion of GCs thanks to their extremely high spatial resolution (~0.05arcsec). We report a study of proper motion of NGC 104, one of the most metal-rich Milky Way GCs, based-on archival images of NGC 104 observed using HST/ACS. Using the stars in Small Magellanic Cloud as reference coordinate, we are able to measure the proper motions of individual stars in NGC 104 with a high precision. We discuss the internal dynamics of stars in NGC 104 by comparing proper motion results based-on shorter (<1yr) and longer (~7yrs) time durations.

[포ST-18] Radial gradients of line indices within the Galactic globular clusters

조재일, 윤석진
연세대학교 천문우주학과

Radial changes of stellar population within the Galactic globular clusters have been reported in many spectroscopic and photometric studies. We present new integrated spectroscopic data for 24 Galactic globular clusters and have measured line indices within various aperture sizes. Radial gradients have been investigated for the Balmer lines and metal lines (Mgb). Our results show an increase in the strength of the Balmer lines toward the centres in some clusters including NGC7078, NGC7089, and NGC6934, in which colour gradients also have been detected previously. However, some other clusters show little trend or even an increase toward the outskirt in the Balmer lines. Metal sensitive lines generally have an anti-correlation with the Balmer lines. We discuss possible stellar populations being responsible for the radial change in line indices.