[구GC-11] A New Method to Find Bars

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We have classified barred galaxies for 418 RC3 sample galaxies within z < 0.01 from SDSS DR7 using the visual inspection, ellipse fitting method and Fourier analysis. We found the bar fraction to be ~60%, 43% and 70% for each method and that the ellipse fitting method tends to miss the bar when a large bulge hides the transition from bar to disk in early spirals. We also confirmed that the Fourier analysis cannot distinguish between a bar and spiral arm structure. These systematic difficulties may have produced the long-time controversy about bar fraction dependence on Hubble sequence, mass and color. We designed a new method to fine bars by analyzing the ratio map of bar strength in polar coordinates, which yields the bar fraction of ~27% and ~32% for SAB and SB, respectively. The consistency with visual inspection reaches around 70%, and roughly 90% of visual strong bar are classified as SAB and SB in our classification. Although our method also has a weakness that a large bulge lowers the value of bar strength, the missing bar fraction in early spirals is reduced to the level of ~1/4 compared to the ellipse fitting method. Our method can make up for the demerits of the previous automatic classifications and provide a quantitative bar classification that agrees with visual classification.

[포GC-12] The AGN-Starburst Connection traced by the Nitrogen Abundance

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The connection between the active galactic nuclei (AGNs) and star formation activity is one of the most important issues in understanding the coevolution of supermassive black holes (SMBHs) and galaxies. In our recent study, by using SDSS quasar spectra we found that the emission-line flux rations involving a nitrogen line, i.e., NVλ1240, correlate with the Eddington ratio. This correlation suggests that the mass accretion into SMBH is associated with a post-starburst phase, when AGB stars enrich the interstellar medium with the nitrogen. Moreover, we focused on nitrogen-loud quasars, which have prominent emission lines of the nitrogen, to investigate whether this argument is correct or not. We will present our recent results described above and discuss the relation between the star formation and feeding to SMBHs.