[구GC-01] Does the linear conversion between calcium infrared triplet and metallicity of simple stellar populations hold in the whole range of metallicity?

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The calcium infrared triplet (CaT) is one of the prominent absorption features in the infrared wavelength regime. Recently, this absorption feature has been getting attention in the prediction of metallicity of stellar populations because of its strong sensitivity to the calcium abundance and metallicity of a star. However, we find that measuring metallicity directly from CaT is very dangerous because the formation mechanism of CaT is very inefficient in the cool stars which are abundant in metal-rich populations. This characteristics of CaT make the CaT-metallicity relation to converge around ~ 8 Å in the metal-rich regime. Our results suggest that, because of the converging CaT-metallicity relation in the metal-rich regime, the metallicity of simple stellar populations greater than [Fe/H]~-0.5 is unreliable when the linear conversion between CaT and metallicity is applied to derive metallicity. Based on these results, we suggest that CaT is not a good metallicity indicator for the metal-rich stellar populations.

[구GC-02] Demographics of galactic bulges in the local Universe through UV and Optical windows

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Bulges of galaxies are thought to have formed and grown at least in part through galaxy mergers, and thus an accurate derivation of their properties can be an effective course to test/confirm our understanding on their formation and evolution in the standard hierarchical merger paradigm. We have generated a sample of galaxy bulges (n = 15,423) in the nearby ($0.005 < z < 0.05$) universe from the SDSS DR7 and GALEX GR6plus7 databases and derived their structural and photometric properties by means of SExtractor and GALFIT application. Most notable properties include bulge-to-total luminosity ratio, effective radius, disk scale length, ellipticity, and position angle. The UV properties of the bulges have also been analyzed to infer their recent star formation history. A spectroscopic analysis has been performed using their absorption and emission line strengths measured and released by the OSSY team. We present our preliminary results from our investigation mainly focused on stellar population properties and discuss their implications on the formation of bulges.