[포GC-06] Investigating the Non-linearity Effect on the Color-to-Metallicity Conversion of Globular Clusters

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Metallicity distribution of globular clusters (GCs) provides an important clue for star formation history of their host galaxy. With an assumption that GCs are generally old, GC colors have been used as a proxy of GC metallicities. Bimodal GC color distributions observed in most large galaxies have, for decades, been interpreted as bimodal metallicity distributions, indicating the presence of two populations within a galaxy. However, the conventional view has been challenged by a new theory that non-linear GC color-metallicity relations (CMRs) can cause a bimodal color distribution even from a single-peaked metallicity distribution. Using the photometric and spectroscopic data of NGC 5128 GCs in combination with stellar population simulation models, we examine the effect of non-linearity in GC CMRs on the transformation of GC color distributions into metallicity distributions. Although, in some colors, offsets are present between observations and models in the CMRs, their overall shape agrees well for various colors. After the offsets are corrected, the observed spectroscopic metallicity distribution is well reproduced via modeled CMRs from various color distributions having different morphologies. On the other hand, the linearly converted metallicity distributions from GC colors show a significant discrepancy with the observed spectroscopic metallicity distribution. We discuss the implications of our results.

[포GC-07] High frequency VLBI imaging of OVV1633+382

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A relativistic jet associated with active galactic nuclei (AGNs) is almost ubiquitous while its formation mechanism is still not well understood. To get a deeper understanding of how an AGN jet forms and evolves, we have obtained Very Large Baseline Array (VLBA) data of a compact and optically violent variable quasar, OVV 1633+382 which is a small line-of-sight angle version of Fanaroff-Reily type 2 galaxy. Before our data were taken, a pronounced flare had been reported at mm wavelengths, making this object an excellent laboratory to study detailed properties of a radio jet powered by an AGN.

The target have been observed in 12 epochs between 2002 and 2005 at 22, 43 and 86 GHz in full polarization mode. Among these observations, in this work, we present 43 GHz total intensity maps of our target for three epochs to discuss kinematics and geometry of the jet.