포 스 터 발 표 소 록

외부은하/은하단

[포 GC-01] Interferometric Monitoring of Gamma-ray Bright AGNs:Measuring the Magnetic Field Strength of 4C+29.45

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We present the results of multi-epoch, multi-frequency monitoring of a blazar 4C +29.45, which was regularly monitored as part of the Interferometric Monitoring of GAmma-ray Bright AGNs program – a key science program of the Korean Very long baseline interferometry Network (KVN). Observations were conducted simultaneously at 22, 43, 86 and 129 GHz during the 4 years from December 2012 to December 2016. We also used additional data from the 15 GHz Owens Valley Radio Observatory (OVRO) monitoring program. From the 15 GHz light curve, we estimated the variability time scales of the source during several radio flux enhancements. We found that the source experiencesd 6 radio flux enhancements with variability time scales of 9-187 days during the observing period, yielding corresponding variability Doppler factors of 9-27. From the multi-frequency simultaneous KVN observations, we were able to obtain accurate radio spectra of the source and hence to more precisely measure the turnover frequencies ν_r of synchrotron self-absorbed (SSA) emission with a mean value of $\overline{\nu_r}$=28.9 GHz. Using jet geometry assumptions, we estimated the size of the emitting region at the turnover frequency. Taking into account these results, we found that the equipartition magnetic field strength is up to two orders of magnitudes higher than the SSA magnetic field strength (0.6-99 mG). This is consistent with the source being particle dominated.

[포 GC-02] The Origin of the Type III Component in the Black Eye Galaxy M64

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The Black Eye Galaxy M64 is an intriguing spiral galaxy with a Type III disk break. To trace the origin of its Type III component, we present HST/ACS F606W/F814W photometry of resolved stars in the outer disk of M64 (2.5' < R < 6.5'). First, we discover a bright extended globular cluster (GC) M64-GC1 at R ~ 5.5', and find that it is an old metal-poor halo GC ([Fe/H] = -1.5 +/- 0.2). Second, we find that there are two distinct subpopulations of red giant branch stars (RGBs). One is an old metal-rich ([Fe/H] ~ -0.4) disk population, and the other is an old metal-poor halo population similar to the resolved stars in M64-GC1. The radial number density profile of the metal-rich RGB follows an exponential disk law, while that of the metal-poor RGB follows a de Vaucouleurs's low. From these results, we conclude that the origin of the Type III component in M64 is a halo, not a disk or a bulge. We will further discuss the results in regards to the formation and evolution of M64.

[포 GC-03] Testing Web Feeding Model for Star Formation in Galaxy Clusters in the COSMOS Field

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It is yet to be understood what controls the star formation activity in high-redshift galaxy clusters. One recently proposed mechanism is that the star formation activity in galaxy clusters are fed by gas and galaxies in large-scale structures surrounding them, which we call as "web feeding model". Using galaxies in the COSMOS2015 catalog, with mass completeness at $\log(M/M_\odot)\geq 9.54$ and reliable photometric redshift data ($\sigma_{\Delta z/(1+z)} \lesssim 0.01$), we study the star formation activities of galaxy clusters and their surrounding environment to test the web feeding model. We first identify the overdense regions with number density exceeding the 4σ -level from photometric redshift data as galaxy clusters, and we find that they are well matched