multiple populations observed in halo globular clusters. The origin of Helium enhancement in the 2nd generation population (G2), however, is not yet fully understood. Here we investigate the origin of this super-Helium-rich population in the framework of self-enrichment scenario. We find that chemical enrichments and pollutions by asymptotic giant branch stars and winds of massive rotating stars can naturally reproduce the observed Helium enhancement. The Helium to metal enrichment ratio appears to be $\triangle Y/\triangle Z = 6$ for G2, while the standard ratio, $\triangle Y/\triangle Z = 2$, is appropriate for G1, which is probably enriched mostly by typeII supernovae.

[포 GC-09] Near-infrared Polarimetric Study of N159/N160 Star Forming Regions in the Large Magellanic Cloud

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We observed two star forming regions, N159 and N160, in the Large Magellanic Cloud with SIRPOL, the polarimeter of the Infrared Survey Facility (IRSF) in South Africa. The photometric and polarimetric observations are done in three near-infrared bands, J, H, and Ks. We measured Stokes parameters of point sources and calculated their degrees of polarization and polarization angles. The polarization vector map shows complex features associated with dust and gas structures. Overall features of the magnetic field in N159 and N160 regions are different from each other and appear to be related to local environments, such as interior and boundary of shell structure, existence of star-forming HII regions, and boundaries between HII regions and dense dark clouds. We discuss the relation between the structure of magnetic field and the local properties of dust and gas in N159 and N160 regions by comparing our polarization vector map with images of Hα, mid-infrared, and ^{12}CO emissions, respectively by WFI of MPG/ESO telescope, Spitzer IRAC, and NANTEN.

[포 GC-10] Estimating dark matter mass for the most massive high-z galaxy cluster, SPT-CL J2106-5844 using weak-lensing analysis with HST observations

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SPT-CL J2106-5844 is known to be one of the most massive galaxy clusters (M_{200} ~ 1.27 × 10^{15} M_{sun}) ever found at z > 1. Given its redshift (z ~ 1.132), the mass of this cluster estimated by Sunyaev-Zel'dovich effect and X-ray observation is too large compared with the current ΛCDM cosmology prediction. Mass estimation from these methods can be biased because they require assumptions on hydrostatic equilibrium, which are not guaranteed to hold at such high redshift (about 40% of the current age of the Universe). Thus, we need to verify the mass of this interesting cluster using gravitational lensing, which does not require such assumptions. In this work, we present our preliminary result of dark matter mass and its spatial mass distribution of SPT-CL J2106-5844 using weak-lensing analysis based on HST optical/NIR deep imaging data. We compare mass estimates from different sources and discuss cosmological implications.

[포 GC-11] What Shapes Disk Galaxies?: Bar Driven Secular Evolution on Disk Galaxies

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We present evidence of the bar driven secular evolution on disks from z~0.8 to z~0.01. Using 3.6 μ*m* images of nearby galaxies from the *Spitzer* Survey of Stellar Structure in Galaxies (S4G) and images from the Cosmological Evolution Survey (COSMOS), we find that barred galaxies show a light deficit in the disk surrounding the bar within the bar radius. We quantify this light deficit and find that galaxies with a stronger bar (longer, higher Bar/T) show a more pronounced light deficit. We examine snapshots from N-body simulations and confirm that as a barred galaxy