relatively strong magnetic field (e.g., B > 40 mG) is correlated with flux enhancements at mm wavelengths (e.g., 86 GHz).

[박C-04] A Study of Globular Cluster Systems in the Coma, Fornax, and Virgo Clusters of Galaxies from *HST* ACS and WFC3/IR Imaging

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I present new near-infrared (NIR) photometry of globular cluster (GC) systems associated to a cD galaxy NGC 4874 in the core of the Coma cluster and 16 early-type galaxies in the Fornax and Virgo clusters of galaxies using the Infrared Channel of the Wide Field Camera 3 (WFC3/IR) on board the *Hubble Space Telescope* (*HST*). Combining these high-resolution NIR data with new *HST* Advanced Camera for Surveys (ACS) optical photometry for NGC 4874 and existing ACS GC catalogs from the ACS Fornax and Virgo Cluster Surveys, I have examined for the first time the GC systems in a statistically significant optical/NIR sample of galaxies spanning a wide range of luminosities and colors. A primary goal of this study is to explore empirically whether the distributions of purely optical and hybrid optical - NIR color indices for extragalactic GCs have different forms and whether the relations between these color indices are nonlinear, indicating that they behave differently with underlying metallicity. I find that some GC systems of large galaxies in our sample show color bimodalities that differ between the optical and optical - NIR colors, in the sense that they have disparate ratios of "blue" and "red" peak GCs, as well as differing ratios in their color dispersions. Consistent with these results, I find empirically that the dependence of hybrid optical - NIR color on purely optical color is nonlinear, with an inflection at intermediate metallicities. These findings underscore the importance of understanding the nature of galaxy-to-galaxy variations in the GC color distributions and color—color relations, as well as the exact forms of the color—metallicity transformations, in interpreting the observational data on GC color bimodality. Our ACS data for NGC 4874 shows that its GC system exhibits a very strong blue tilt, implying a very steep mass—metallicity scaling, and the centroid of this GC system is offset by 4±1 kpc from the luminosity center of NGC 4874, in the direction of NGC 4872. Finally, I discuss the asymmetrical GC distribution around a dwarf elliptical galaxy in Coma that has a very high relative velocity with respect to the cluster mean at small clustercentric radius.

[구 GC-05] New insights on the chemical evolution in proto-globular clusters and galaxy building blocks (원시 구상성단과 은하 빌딩블럭의 새로운 화학적 진화모델)

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초기 우주의 구상성단과 같은 소규모 은하 빌딩블럭이 은하의 형성에 미치는 영향을 이해하기 위하여 우리는 완전히 새로운 개념의 화학적 진화모형을 구축하였다. 최근의 이론적 진보를 바탕으로 우리의 모델에서는 이전 모델과 달리 초신성의 폭발과 분출물이 원시 구상성단 내 잔존 가스에 아무런 영향을 끼치지 못하고 대부분 빠져나간다. 이 경우 화학적 진화는 질량이 큰 별의 윈드와 점근거성계열성의 분출물에 의해 좌우된다. 놀랍게도 우리의 모델은 오랜 난제인 구상성단 내 Na-Oxygen anticorrelation 및 다중항성종족의 기원을 자연스럽게 설명하면서 동시에 Lee, Joo, & Chung (2015) 이 최근 주장한 것처럼 은하 벌지에 헬륨 함량이 매우 높은 항성이 존재할 것으로 예측한다. 이 결과는 은하의 헤일로와 벌지 형성에 매우 중요한 단서를 제공한다.

[구 GC-06] Constraints on the Evolution of the Galaxy Stellar Mass Function I: Role of Star Formation, Mergers and Stellar Stripping

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We study the connection between the observed star formation rate-stellar mass (SFR-M) relation and the evolution of the stellar mass function (SMF) by means of a Subhalo Abundance Matching technique coupled to merger trees extracted from a N-body simulation. Our approach, which considers both galaxy mergers and stellar stripping, is to force the model to match the observed SMF at redshift z>2, and let it evolve down to the present time according to the observed (SFR-M) relation. In this study, we use two different sets of SMFs and two SFR-M relations: a simple power law and a relation with a mass-dependent slope.

Our analysis shows that the evolution of the SMF is more consistent with a SFR-M relation with

[구 GC-07] The mass of the high-z (z~1.132) massive galaxy cluster, SPT-CL J2106-5844 using weak-lensing analysis with HST