

[포 ST-05] A Statistical Approaching about Characteristics of Galactic Open Clusters from the perspective of Blue Straggler Formation Environments

Hyun-Uk Lee^{1,2}, Heon-Young Chang^{1,2}
¹Department of Astronomy and Atmospheric Sciences, Kyungpook National University, Daegu, Korea, ²Research and Training Team for Future Creative Astrophysicists and Cosmologists (BK21 Plus Program), Kyungpook National University, Daegu, Korea

Blue Straggler Stars(BSS) affect their host star cluster in various parameters like color, dynamics, etc. For this reason, it is important to know how to relate BSS frequency and evolution of their host stellar system. To statistical study about global properties of open clusters as the environments of BSS formation, we use three catalogues - (1) two galactic open clusters catalogues including BSS candidate, (2) Milky Way Star Cluster (MWSC) survey data. Then, we compare with the data of two BSS catalogues for test of the result of Marchi et al. 2006. We also investigate the radial mass distribution in open cluster, because it is possible that changing the gradient of radial mass distribution cause increasing the BSS frequency. When we group the open cluster into having BSS or not and other criteria, the groups show slight discrepancies, but we show some important results.

ALMA/JCMT

[포 AJ-01] Status of ASTE Focal Plane Array Development

Jung-Won Lee¹, Do-Heung Je¹, Bangwon Lee¹, Hyunwoo Kang¹, Jan Wagner¹, Jongsoo Kim¹, Seog-Tae Han¹(이상 한국), Shin'ichiro Asayama², Takafumi Kojima², Alvaro Gonzalez², Matthias Kroug², Wenrei Shan², Satoru Iguchi, Daisuke Iono (이상 일본)
¹Korea Astronomy and Space Science Institute
²National Observatory of Japan

As an enhancement to increase mapping speed of the current ALMA TP array, development of a focal plane array system working at ultra wide frequency range of 275-500 GHz with GPU-based software spectrometers has been carried out since

2015. Major progresses on such component development as wideband DSB mixers, a profiled corrugated horn, receiver optics, LO system and GPU-based spectrometer are reviewed with brief introduction to implication of ALMA 2030 for technical implementation.

과학관과 천문학교육

[포 AE-01] Astronomy with Cambodian Children (캄보디아 어린이들을 위한 천문학 교육 프로그램)

A-Ran Lyo (여아란)³, Dongil Kang (강동일)¹, Wonseok Kang (강원석)², Min Gyu Kim (김민규)³, Yonggi Kim (김용기)⁴, oong-Tae Kim (김웅태)⁵, Hong-Kyu Moon (문홍규)³, Soonchang Park (박순창)⁶, Changbom Park (박창범)⁷, Myung Gyoon Lee (이명균)⁵, Sang Gak Lee (이상각)^{2,5}, Sang Hyun Lee (이상현)³, A-Ran Lyo (여아란)³, Jeong Ae Lee (이정애)^{3,8}, JaEun Han (한자은), Jueun Hong (홍주은)⁹
¹Changwon Science Highschool, ²National Youth Science Center, ³Korea Astronomy and Space Science Institute, ⁴Chungbuk National University, ⁵Seoul National University, ⁶Metaspace, ⁷Korea Institute for Advanced Study, ⁸University of Science and Technology, ⁹Sphere Inc.

90년대 후반에 내전이 끝난 캄보디아는 태국이나 베트남에 비해 정치, 경제적으로 안정되지 못한 상황이다. 어린이들에 대한 교육환경 역시 좋지 않아, 기초과학을 접할 수 있는 기회가 적을 뿐 아니라, 대도시를 벗어난 곳에서는 과학교육이 거의 이루어지지 못하고 있는 현실이다. 수도 프놈펜에서 북서쪽, 차편으로 4시간 거리에 있는 뿌삿시 크로암에서 몬테소리 유치원을 운영하고 있는 한국봉사단의 요청으로 한국천문학회는 2016년 상반기에 관심 있는 학회 구성원들을 중심으로 천문학 교육 프로그램 지원단을 구성하여 6월말부터 25일까지 2주 동안 현지 어린이들을 대상으로 천문학 교육 프로그램을 수행한 바 있다. 모두 50여명의 초, 중등 학생들이 참여하여 성황리에 마무리된 캄보디아 교육 프로그램의 성과와 시사점, 앞으로의 계획 등을 소개하고자 한다.

외부은하/우주론

[포 GC-01] How Does the Bar Affect AGN-Driven Quenching within Late-type Galaxies

Woong-Bae Jee & Suk-Jin Yoon
 Center of Galaxy Evolution Research, Yonsei

University

Recent galaxy simulations suggest several scenarios in which the inner structure of late-type galaxies (LTGs) is linked to global quenching. Exactly what mechanism governs the bulge quenching is, however, still under debate due to the lack of observational clues. In this study, we utilize a sample of $\sim 1,300$ LTGs in the local universe ($0.02 < z < 0.2$) from SDSS 7, and classify them into star-forming, AGN-hosting, and composite types and into barred and unbarred galaxies. We also examine each subgroup's specific star forming rate (sSFR), stellar mass and compactness using a data set matched with the advanced sSFR catalog by Chang et al. (2015). We find that while star-forming and composite galaxies show no detectable difference between barred and unbarred galaxies, barred AGNs have much lower sSFR than unbarred AGNs at given stellar mass and compactness. Such tendency is stronger for more massive and/or more concentrated galaxies. The results indicate that most AGN-driven quenching is triggered by growth of the bar structure, consistent with the previous simulations of bars.

[포 GC-02] Disruption time scale of merged halos in a dense cluster environment

Jihye Shin¹, James E. Taylor² and Eric Peng³

¹Korea Institute for Advanced Study, Korea,

²Waterloo University, Canada, ³Kavli Institute for Astronomy and Astrophysics at Peking University, China

To obtain a reliable estimate of the cold dark matter (CDM) substructure mass function in a dense cluster environment, one needs to understand how long a merged halo can survive within the host halo. Measuring disruption time scale of merged halos in a dense cluster environment, we attempt to construct the realistic CDM mass function that can be compared with stellar mass functions to get a stellar-to-halo mass ratio. For this, we performed a set of high-resolution simulations of cold dark matter halos with properties similar to the Virgo cluster. Field halos outside the main halo are detected using a Friend-of-Friend algorithm with a linking length of 0.02. To trace the sub-halo structures even after the merging with the main halo, we use their core structures that are defined to be the most 10% bound particles.

[포 GC-03] Recent results of a KVN key science program: iMOGABA

Sang-Sung Lee^{1,2}

¹Korea Astronomy and Space Science Institute,

²Korea University of Science and Technology

We present recent results of very long baseline interferometry (VLBI) observations of gamma-ray bright active galactic nuclei (AGNs) using Korean VLBI Network (KVN) at 22, 43, 86, and 129-GHz bands, which are part of a KVN key science program; Interferometric Monitoring of Gamma-ray Bright AGNs (iMOGABA). We selected a total of 34 radio-loud AGNs of which 30 sources are gamma-ray bright AGNs, including 24 sources monitored by the Fermi Gamma-ray Space Telescope using the Large Area Telescope on board. The selected sources consist of 24 quasars, 7 BL Lacs, and 3 radio galaxies. In this talk, we summarize recent results of the iMOGABA, including results of single-epoch multi-frequency VLBI observations of the target sources, conducted during a 24-hr session on 2013 November 19 and 20. All observed sources were detected and imaged at all frequency bands with or without a frequency phase transfer technique which enabled to detect and image 12 faint sources at 129 GHz, except for 0218+357 which was detected for only one baseline at all frequency bands.

[포 GC-04] KYDISC program : Galaxy Morphology in the Cluster Environment

Sree Oh¹, Yun-Kyeong Sheen², Minjin Kim², Joon Hyeop Lee^{2,3}, Jaemann Kyeong², Chang H. Ree², Byeong-Gon Park^{2,3}, Sukyoung K. Yi¹

¹Yonsei university, ²Korea Astronomy and Space Science Institute, ³University of Science and Technology

Galaxy morphology involves complex effects from both secular and non-secular evolution of galaxies. Although it is a final product of galaxy evolution, it gives a clue to the processes that the a galaxy has gone through. Galaxy clusters are the sites where the most massive galaxies are found, and thus the most dramatic merger histories are embedded. Our deep imaging program ($\mu \sim 28$ mag arcsec⁻²), KASI-Yonsei Deep Imaging Survey for Clusters (KYDISC), targets 14 Abell clusters at $z = 0.016 - 0.14$ using IMACS/Magellan telescope and MegaCam/CFHT to investigate cluster galaxies especially on low surface brightness features related to galaxy interactions. We visually classify