

Sciences, Kyungpook National University, ²Korea Institute of S&T Evaluation and Planning

This study aims to overview research articles on extrasolar planets using Kepler mission data during the period of 2009-2015 in order to discover research trends in them. Kepler space observatory is a NASA space observatory for extrasolar planet expedition launched in March 2009, contributed to the discovery and tracking of extrasolar planets and its candidates. In order to achieve the goal of this study, we classified research subjects from studies on Kepler mission data year by year and found the most frequent research topics each year. We also conducted a comparative analysis on the research subjects based on time series and examined any changes with respect to the goal of Kepler mission. Statistical meta-analysis is employed as the analysis method for the key words presented in the research articles.

This study is a part of on-going research to find the correlation between the physical parameters of the host star and extrasolar planets. The results of this study could offer new directions in researches utilizing Kepler mission data as those meta-analyses in social sciences often suggest new opportunities. We have high expectations that more extrasolar planet studies will follow as we make further progresses in various analyses.

[포 ST-12] Orbital stability study and transit-timing variations of the extrasolar planetary system: K2-3

Beom-Kyu Choi¹, Tobias C. Hinse², Tae Seog Yoon¹
¹Department of Astronomy and Atmospheric Sciences, Kyungpook National University, ²Korea Astronomy and Space Science Institute

We investigated the dynamical properties of the K2-3 multi-planet system. Recently three transiting planets are discovered using the extended Kepler2 (K2) mission (Crossfield et al. 2015). We extended their preliminary stability study by considering a substantial longer integration time. Since planet mass is not known from photometry we calculated exoplanets masses using empirical mass-radius relations (Weiss & Marcy 2014). Forward numerical integration was done using the MERCURY integration package (Chambers 1999). Our results demonstrate that this system is stable over a time scale of 10^8 years. Furthermore, we investigated the dynamical effects of a hypothetical planet in the

semi-major axis vs eccentricity space. For stable orbits of the hypothetical planet we calculated transit-timing variation (TTV) and radial velocity signals. We find that for a hypothetical perturber with mass 1-13 M_{Jup}, semi-major axis 0.2 - 0.8 AU and eccentricity 0.00-0.47 the following timing signals for the planet K2-3 b is ~ 5 sec, K2-3 c is ~ 130 sec and for K2-3 d is ~ 190 sec. The radial velocity signal of the hypothetical planet is ~ 4 m/s. Using typical transit-timing errors from the K2 mission, we find that the above hypothetical planet would not be detectable. Its radial velocity signal, however, would be detectable using the APF 2.4m telescope or HARPS at the ESO/La Silla Observatory in Chile.

[포 ST-13] Low-Resolution Spectroscopy of Red Giant Branch stars in the Globular Cluster NGC 2808

Seungsoo Hong¹, Dongwook Lim¹, Sang-Il Han², and Young-Wook Lee¹

¹Department of Astronomy, Yonsei University, Seoul 03722, Korea

²Korea Astronomy and Space Science Institute (KASI), Daejeon 34055, Korea

The presence of multiple stellar populations is now well established in most globular clusters (GCs) in the Milky Way. The origin of this, however, is yet to be understood. In this respect, the study of NGC 2808, a GC which hosts five sub-populations differing only in light-element abundances, would help to understand the origin of this multiple stellar populations. In order to investigate CN, CH, and Ca abundances among different populations in NGC 2808, we have performed low-resolution spectroscopy for the red giant branch (RGB) stars in this GC. Here we report preliminary results from this spectroscopic analysis.

태양 및 우주환경

[포 SS-01] Relative contribution of geomagnetic and CO₂ effects to global temperature anomaly

Jinhyun Kim¹ and Yong-Jae Moon^{1,2}

¹Department of Astronomy & Space Science, Kyung Hee University, Korea, ²School of Space Research, Kyung Hee University, Korea

We have investigated the correlation analysis