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

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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 10⁶ 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 Mjup, 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 SS-01] Relative contribution of geomagnetic and CO2 effects to global temperature anomaly

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We have investigated the correlation analysis