
 [JJ] Evening Poster | P (Space and Planetary Sciences) | P-AE Astronomy & Extrasolar Bodies

[P-AE20]Exoplanet

convener:Masahiro Ikoma(Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo), Norio Narita(University of Tokyo)

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Exoplanetary science, which began with the discovery of a hot Jupiter in 1995, has reached a major turning point by the discovery of countless super-Earths by the Kepler mission. More recently, planets that are similar in size to the Earth and also receive similar amounts of stellar radiation (namely, located in the so-called habitable zone) have been discovered around nearby stars such as Proxima Centauri and TRAPPIST-1. As a result, not only theoretical, but also observational studies on the atmospheres and surface environments of Earth-like exoplanets have been started. Moreover, the number of planets discovered around early-type and late-type stars has become large enough that the occurrence rate and orbital distribution of planets around a wide variety of host stars have become clear. Thus, new observational insights, which become the basis of pan-planet formation theory, are now gathering. While exoplanets have been mainly targeted for astronomy until recently, it can be said that earth planetary science is finally becoming a research field to make a central contribution. In this session, we aim to share cutting-edge research results in exoplanetary science which is in such a transition period.

[PAE20-P09]Development of Extrasolar Planetary database Exokyoto into its application for new criteria of HZ

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Keywords:CHZ, ExoKyoto, Stellar flare

We developed extrasolar planetary database ExoKyoto which includes CHZ and confirmed extrasolar planets with all available information. We attempted to develop new criteria for habitable zone in order to apply its potential usage.

An integrated database of confirmed exoplanets has been developed and launched as “ExoKyoto” for the purpose of better comprehension of exoplanetary systems in different star systems. The HOSTSTAR module of the database includes not only host stars for confirmed exoplanets, but also over hundred thousands of stars existing in the star database listed in (HYG database). Each hoststar can be referred to in the catalogue with its habitable zone calculated, based on the observed/estimated star parameters. For outreach and observation support purpose, ExoKyoto possesses Stellar Windows, developed by the Xlib &Ggd module, and interfaces with GoogleSky for easy comprehension of those celestial bodies on a stellar map. Target stars can be identified and listed by using this database, based on the target magnitude, transit frequency, and photon decrease ratio by its transit.

The flate impact estimation module of the database is the first attempt to estimate potential impacts for “life” form on the planets which provides estimated dose under hypothetical atmospheric compositions and magnetic field. Using the framework of the database we propose a comprehensive evaluation system for stellar flares and their impacts, focusing on SPE on selected extrasolar planets (Kepler-283 b and c, Kepler-491 b, Kepler- 957 b, Kepler-1558 b, Proxima Cen b, and TRAPPIST-1 systems).