Extra Planet Search by Transit Method using Subaru Telescope

Seitaro Urakawa[1]; Toru Yamada[2]; Yoichi Itoh[3]; Tadashi Mukai[4]

[1] Grad.School.Sci/Tech, Kobe Univ; [2] NAOJ; [3] Grad. School Sci/Tech, Kobe Univ.; [4] Space and Planetary Materials, Kobe Univ

http://www.harbor.scitec.kobe-u.ac.jp/

Over 100 extra solar planets have been discovered since 1995. The radial velocity method had been used to discover most of them. The method has some disadvantages that the targets of observation are limited to solar neighborhood stars and that the inclinations of the extra solar planets are unknown. Other detection methods have been suggested to solve these problems. One of them is the transit method. The idea this method is to detect the luminosity change of a star due to occultation by an extra solar planet. There are two good points in this method which are the ability to detect extra solar planets far from our solar system and to determine their inclination.

However the percentage of luminosity change is only 1%. In addition, the probability that an arbitrary extra solar planet causes a transit event during observation is about 1/14000. Thus this method requires very high accurate photometry and the observation of many stars by using a wide field of view detector. In this study we tried to detect extra solar planets by the transit method using Suprime-Cam(Subaru Prime Focus Camera). The camera is attached with a very large 8.2m telescope and it has a very wide field of view of 34'*27'. Therefore we expect to detect extra solar planets. In this survey we observed about 8400 stars in the field of view with about 1% accuracy, so the detection probability of extra solar planets is about 60%. We present current data analysis by observations done on Sep 2002 and the possibility of extra solar planet search.