To: Heike Rauer

From: William J. Borucki, Kepler PI

Letter of Support for the proposed PLATO Mission

I am delighted to express my enthusiasm for the PLATO Mission. The Mission will be a great step forward in the exploration of our galaxy. It's capability to find Earth-size planets in the habitable zone, and to determine their size, mass and density and to associate the results with stellar types will provide critical information on the frequency and distribution of possibly habitable planets. Because PLATO looks at bright stars compared to those observed by the Kepler Mission, much more comprehensive radial velocity and asteroseismology investigations can be conducted that will greatly expand the information on exoplanets, the stars the planets orbit, and about the ages of the planetary systems. Radial velocity observations of bright, rapidly rotating stars can use the McLaughlin-Rossiter effect to determine the orientation of the orbital planes relative to the stellar equator and thus give us insight about the effects of scattering and resonance in the development and structure of planetary systems. This expanded information from PLATO could provide the break through needed to understand the enormous variety of exoplanets that range from gas- and ice-giants to rocky planets like the Earth. The structures of the individual planets in a system as well as their arrangement in the planetary system and the types of stars they orbit will spur the development of theoretical models that will help us understand the development of our own Solar System.

By the time PLATO observations are in progress, several very-large-aperture ground-based telescopes will be active. These facilities will further increase the value of its discoveries by getting transmission spectra of the atmospheres of the planets discovered by PLATO.

Another important aspect of the PLATO mission is its capability to cover a huge region of the sky. The large sky coverage will allow the investigation of star types not observed by Kepler, in particular both young and hot stars in star-forming regions and in nearby stellar clusters of different ages and states of evolution.

Furthermore, the PLATO Mission design is not only very robust (a failure of one or more of the thirtytwo telescopes will only marginally degrade the scientific results), but its development and use of fast optical systems, huge arrays of detectors, and the analysis of large data sets are state-of-the-art systems that point the way to making even more ambitious future missions possible.

It is clear that PLATO will be the logical successor to the highly successful Kepler mission and that its new discoveries will surely expand our exploration of our knowledge of our galaxy.

William J. Berucki

Kepler Principal Investigator