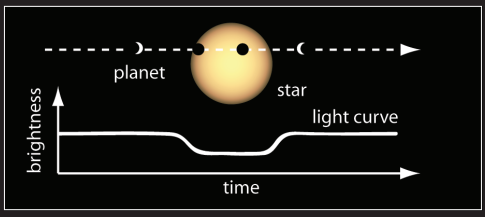
discover

National Aeronautics and
Space Administration

Kepler is NASA's first mission capable of finding Earth-size planets in the habitable one (HZ) of stars similar to our Sun. The HZ is the distance from a star where liquid water can exist on a planet's surface.

Kepler is a specially designed wide-field telescope called a photometer. It has a 95 megapixel detector. It was launched March 6, 2009 into orbit around our Sun and functions as a very precise light meter. It can detect the very faint and periodic decreases in a star's brightness caused by a planet transiting a star. Transits occur when the orbit of a planet is along our line of sight to a star.



Transits last from a few hours to about half a day and happen once per orbit of the planet around its parent star. Three transits with a consistent period, brightness change, and duration provide a rigorous method for detecting extrasolar planets. From the transits observed with *Kepler*, scientists can determine both a planet's size and its orbit. The planet's size determines if it could have a life-sustaining atmosphere. Knowing the orbit and type of star, scientists can determine if the planet is in the HZ of that star.

Kepler is pointed at a rich star field in the Cygnus and Lyra regions of our galaxy, the Milky Way, and continuously monitors more than 100,000 stars to look for planets.

Scientists expect to detect hundreds of Earth-size planets if they are common around other Sun-like stars. If only a few or no small planets are found, then we can conclude that other Earths are probably rare.

Kepler

Learn more, visit the *Kepler* web site
http://kepler.nasa.gov

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