Introduction Draft

For years, people have wondered: Are we alone in the vast universe? Over the past decade, the new field of exoplanets has exploded into one of the most popular topics in astronomy. In 2009, NASA launched the Kepler observatory into space, beginning a new era of space exploration: The search for Earth-like planets orbiting other stars. Kepler surveyed over 150,000 stars searching for these Earth-like planets. Kepler detects planets by looking for periodic dips in the brightness of stars. Some planets pass in front of their stars as seen from our point of view on Earth; when they do, they cause their stars to dim slightly, an event Kepler can see more specifically called the Transit Method. The Kepler satellite continuously surveyed a selected area of 10 degrees by 10 degrees in the Cygnus-Lyra region of the Galactic field to determine the proportion of stars, particularly Main Sequence type stars, showing the planetary transits using light curves (Rhodes and Budding, 2014). To get an idea of how powerful the detectors of the telescope are, that from up in space, it could detect someone in a small town turning off an outer light at night. Kepler has been placed in what's called an "Earth trailing" orbit around the sun. A little wider and slower than our own orbit, the spacecraft will take 371 days to complete one circuit. Each day Kepler would fall falls a farther and farther behind Earth—eventually the distance will open to tens of millions of miles. This uncommon orbit, used for the first time with the Spitzer infrared space telescope in 2003, has advantages for astronomical telescopes. One is that Earth doesn't obstruct their view of the sky. The spacecraft doesn't need to be boosted periodically to maintain its altitude above Earth. And best of all, it's a very fuel-efficient orbit, requiring less energy (smaller rocket, lower cost) to reach than the L2 Lagrange point which is where Kepler was originally planned to be Kepler’s target. Expect these Earth-trailing orbits to become a popular choice for future astronomy missions.

One year in to its three and one half year mission approximately 3000 planetary transits had been recorded and analyzed. Mostly these are attributed to planets larger than the Earth, although about 10% of candidates hitherto are of a size comparable to that of the Earth. The majority of known examples are smaller than Jupiter, although around 10 percent are of about the same size or larger. About 5% have been located in the ‘habitable zones’ of their parent stars. NASA announced the positive identiﬁcation of Earth-sized planets towards the end of 2011. It should also be noted that a fair proportion of initially announced planet ﬁnds, perhaps more than ∼30% have since been marked as false positives (Rhodes and Budding, 2014).

Specifically, in this article, we will address the formation of exoplanets and what it has to do with stars. As a star begins to form, the protoplanetary disc around it has a collection of debris and other gases that did not fall into the star. The debris and gas begin to accrete and eventually will create either rocky planets or gas giants, much like Jupiter or Neptune.

There are a lot of ways to detect if there is a planet orbiting a star, including transit events, radial velocities, microlensing, imaging, and pulsar timing. The main method of detection is the first, transit events. This was the type of detection the Kepler observatory used. Light curves produced by these transits show dips in In

There have been a lot of theorys

Formation of Exoplanets

Detection techniques

Star type vs Life on the planet

M-stars and Earth-like planets