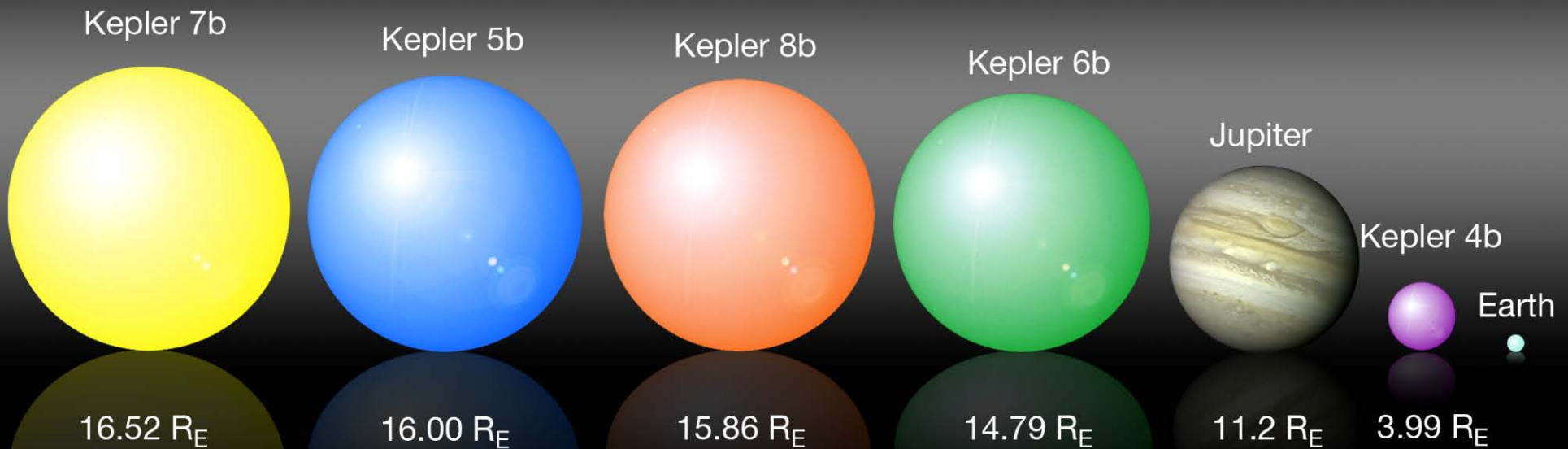


Kepler Space Mission: Detection of Earth-size Planets in the Habitable Zone of Solar-like Stars

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The first step in discovering the extent of life in our galaxy is to determine the number of terrestrial planets in a habitable zone (HZ) of solar-like stars. Recent discoveries based on the Doppler-velocity technique have shown that many stars have giant planets, but this technique cannot detect Earth-size planets orbiting solar-like stars. The *Kepler* Mission is based on observing transits and is designed specifically to determine the frequency of terrestrial planets in a HZ. It was launched and is now monitoring 150,000 solar-like stars to detect patterns of transits that provide the size of the planet relative to the star and its orbital period. Combining these measurements with ground-based spectroscopy fixes the stellar parameters, the planet radius, orbital distance, and location relative to the HZ. Hundreds of terrestrial planets should be discovered before the mission ends, implying that life might be ubiquitous in our galaxy. Five large planets have been discovered already.





William Borucki is a space scientist at the NASA Ames Research Center in Mountain View, California. He received an MSc in physics from the University of Wisconsin in 1962 and then moved to NASA Ames where he first worked on the development of the heat shield for the Apollo Mission in the Hypersonic Free Flight Branch. After the successful Moon landings, he transferred to the Theoretical Studies Branch where he investigated lightning activity in planetary atmospheres and developed mathematical models to predict the effects of nitric oxides and chlorofluoromethanes on the Earth's ozone layer. Currently he is the Science Principal Investigator for the Kepler Mission that is designed to determine the frequency of terrestrial planets orbiting in and near the habitable zones of other stars. The Mission uses transit photometry to observe over 100,000 stars, was launched on March 6, 2009, and is now in the science operations phase.