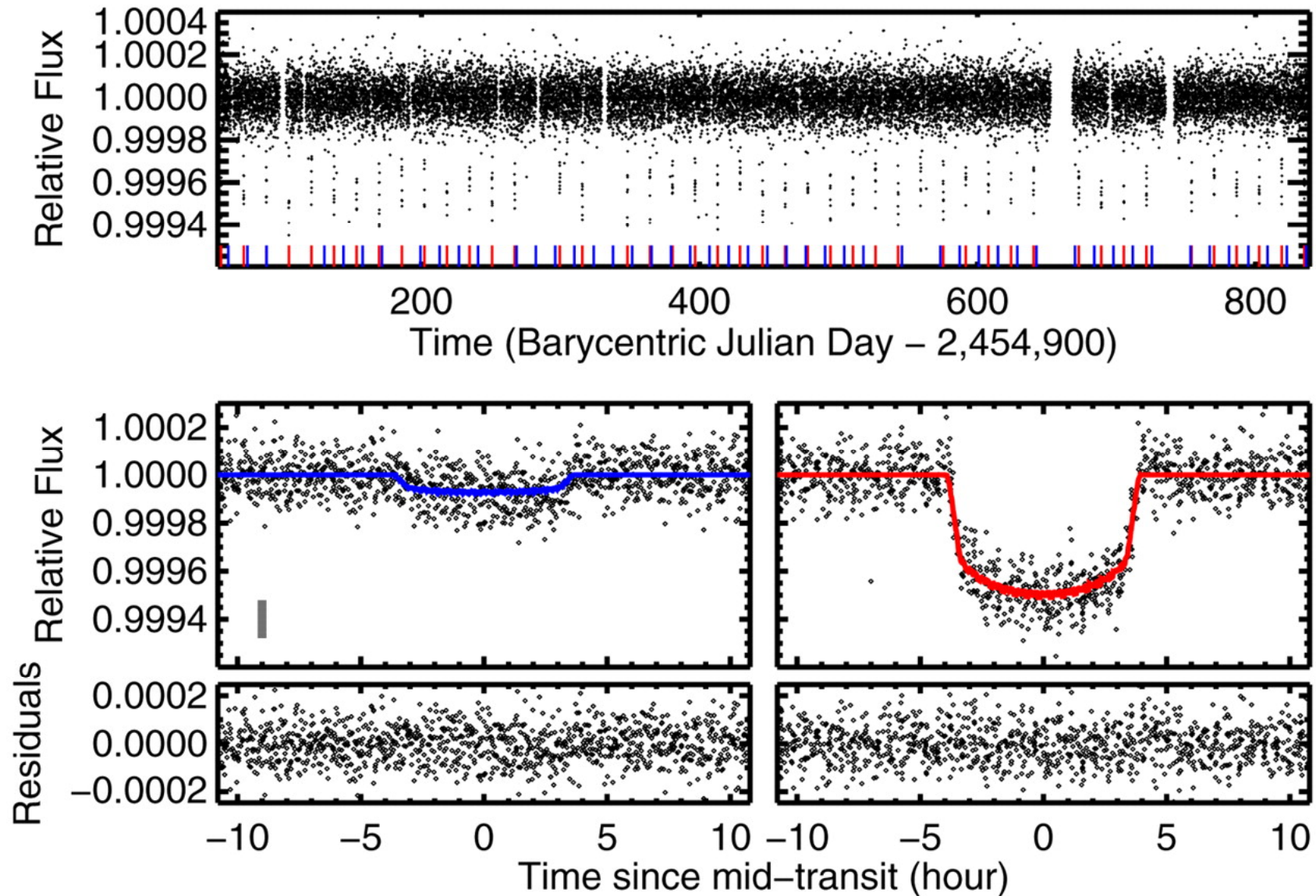


Compositional Constraints on the Best Characterized Rocky Exoplanet, Kepler-36 b

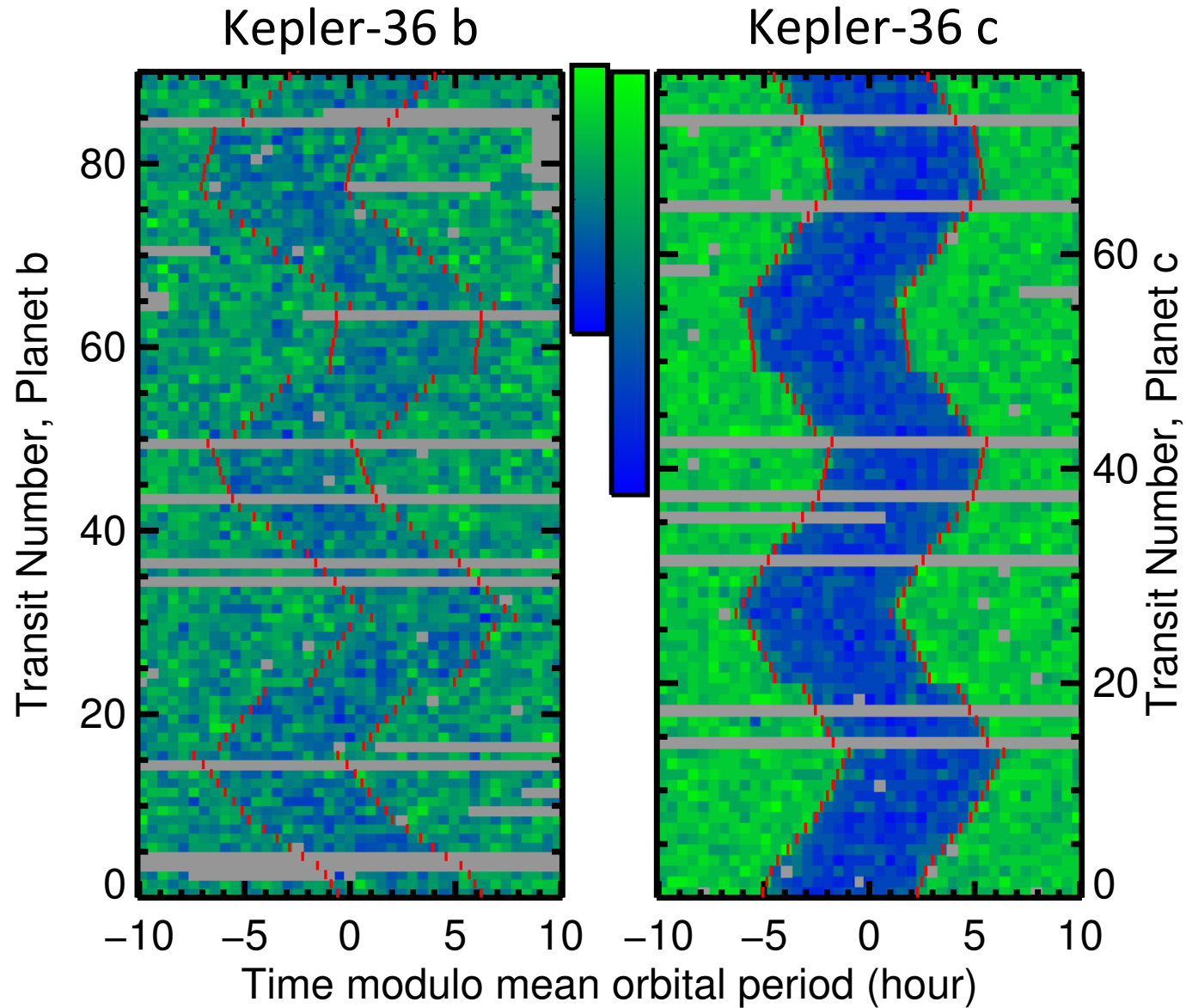
Jack J. Lissauer, Leslie Rogers,
Katherine Deck, Joshua Carter

Kepler-36: A Pair of Planets with Neighboring Orbits and Dissimilar Densities

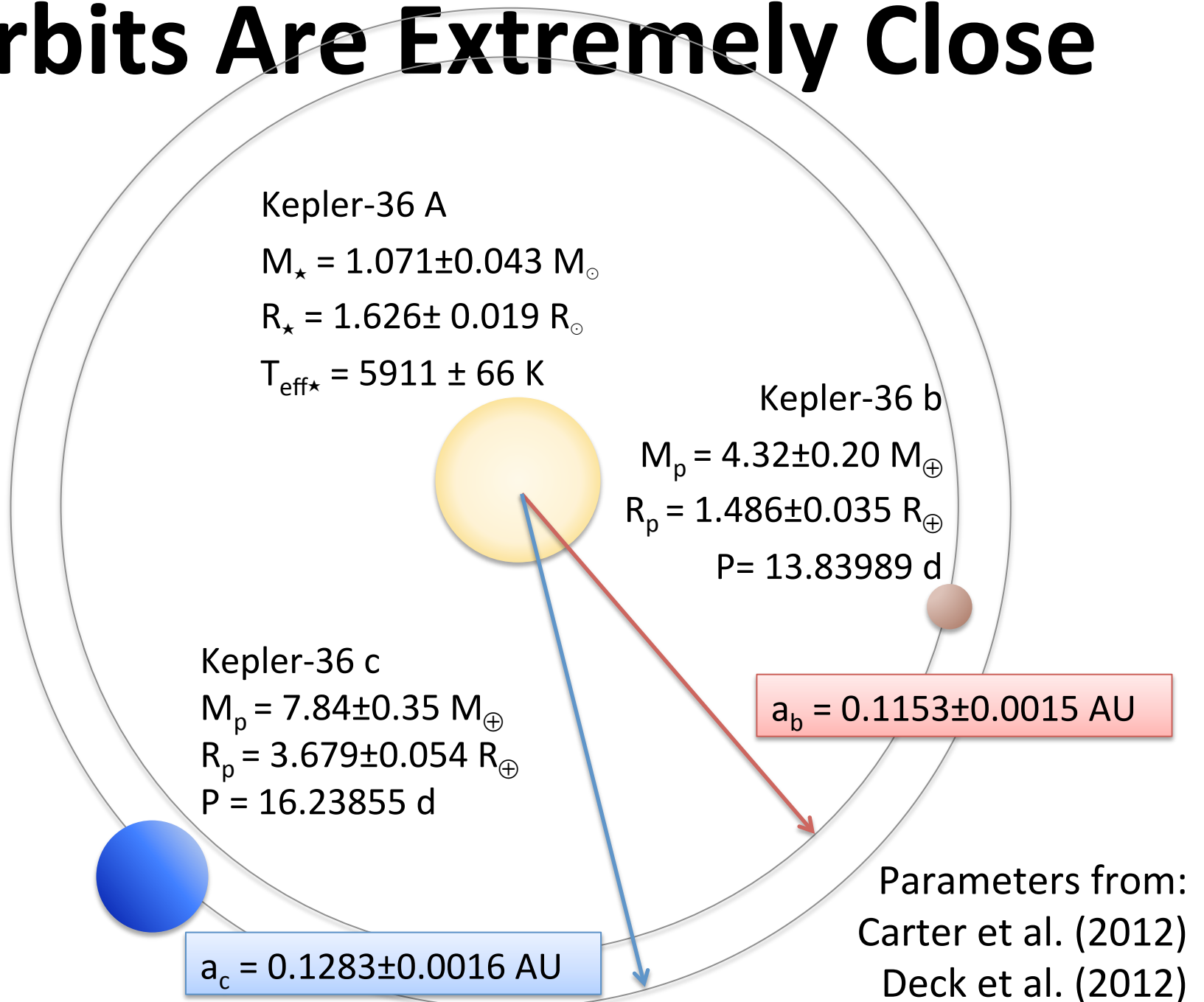
(Carter et al. 2012, *Science* 337, 556)



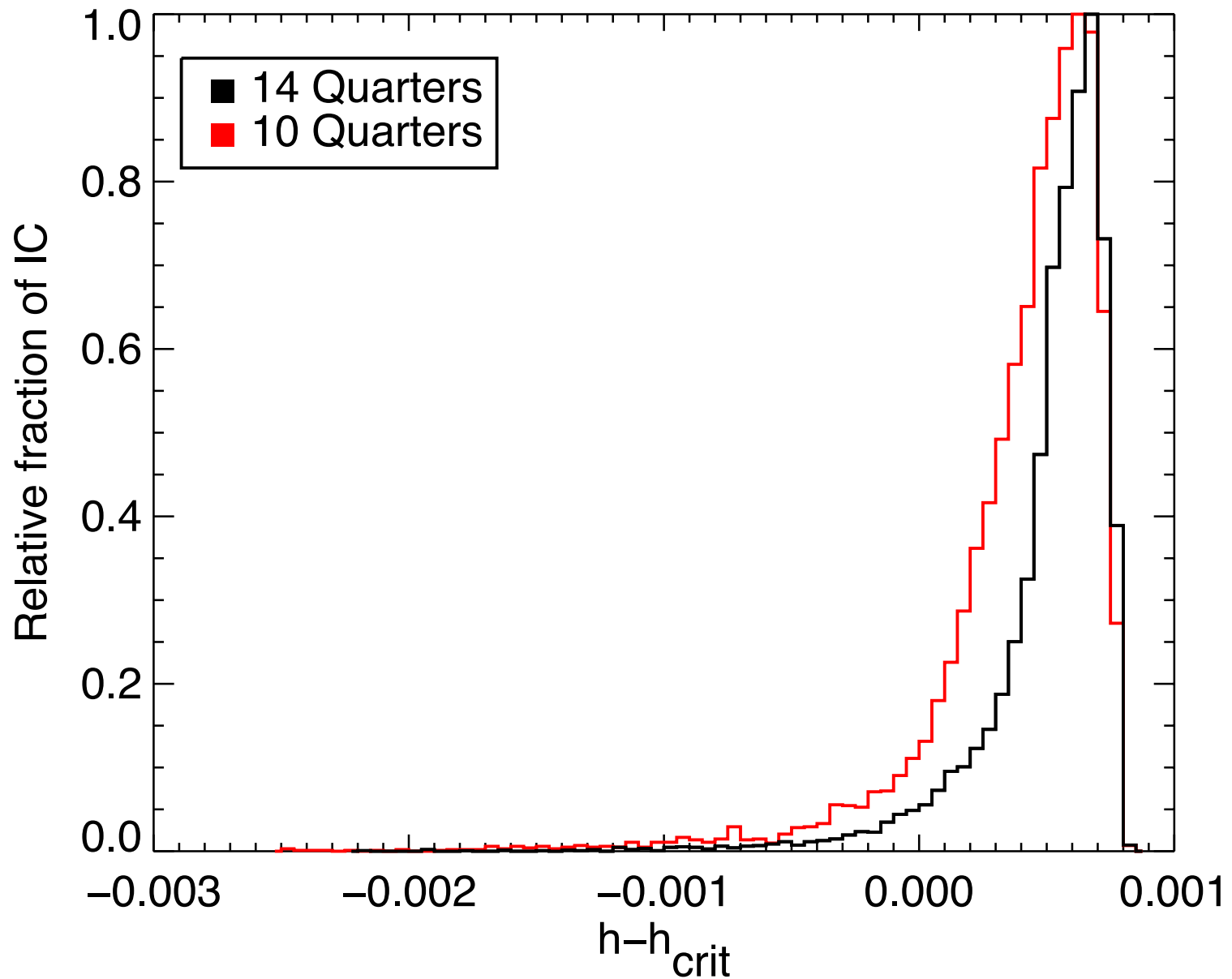
Planet Transit Timing Variations



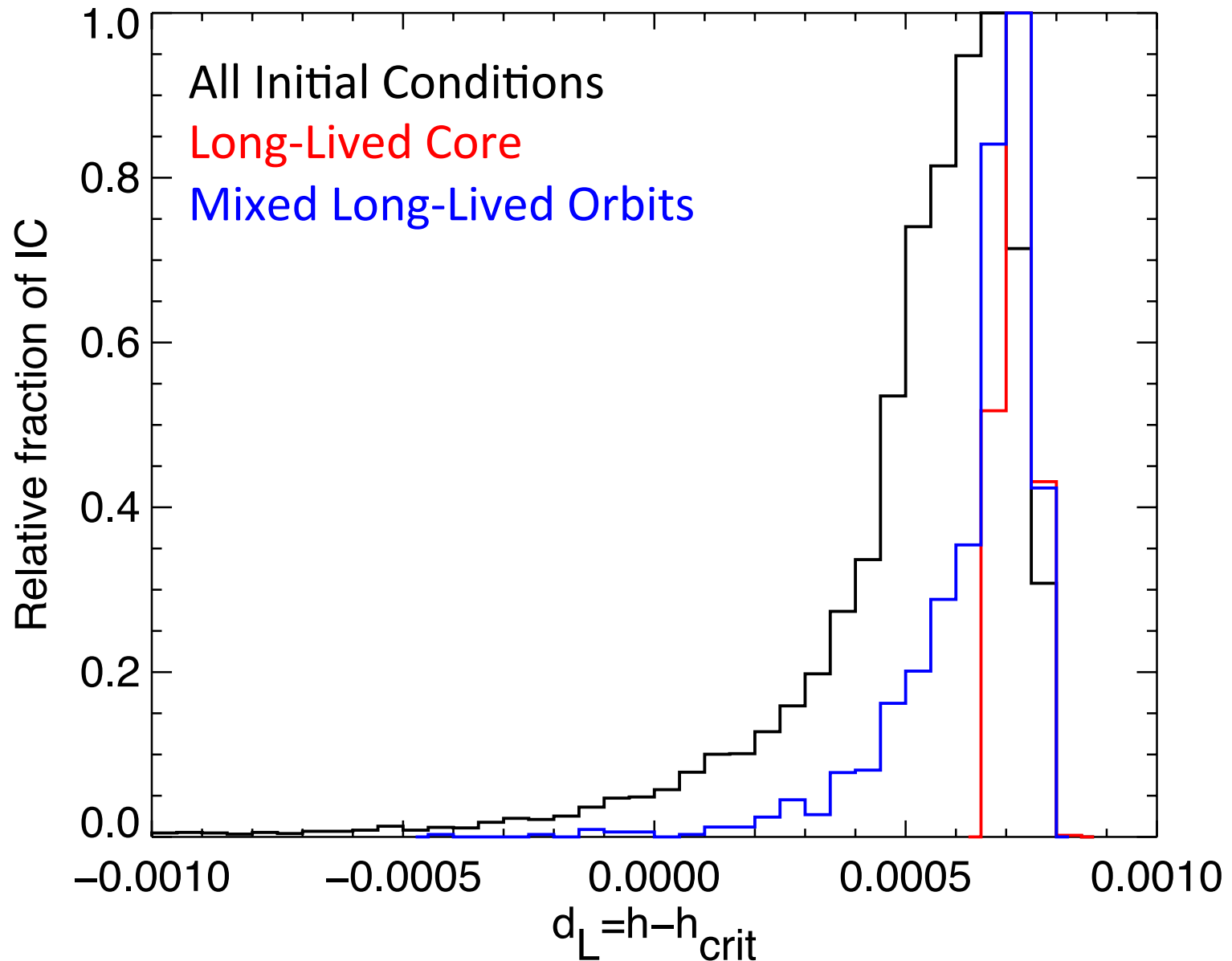
Orbits Are Extremely Close



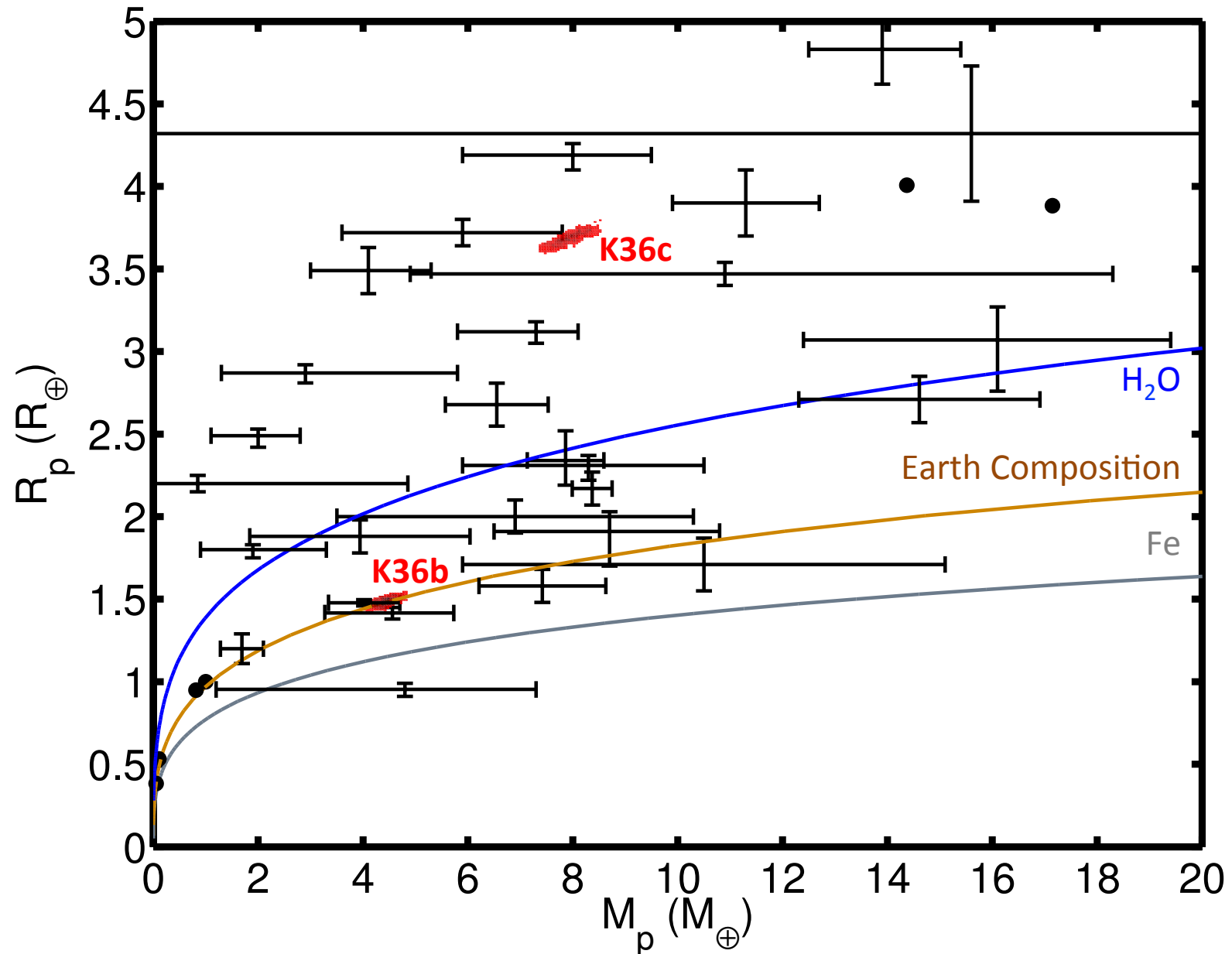
Hill Stability of Photo-dynamical Model Solutions



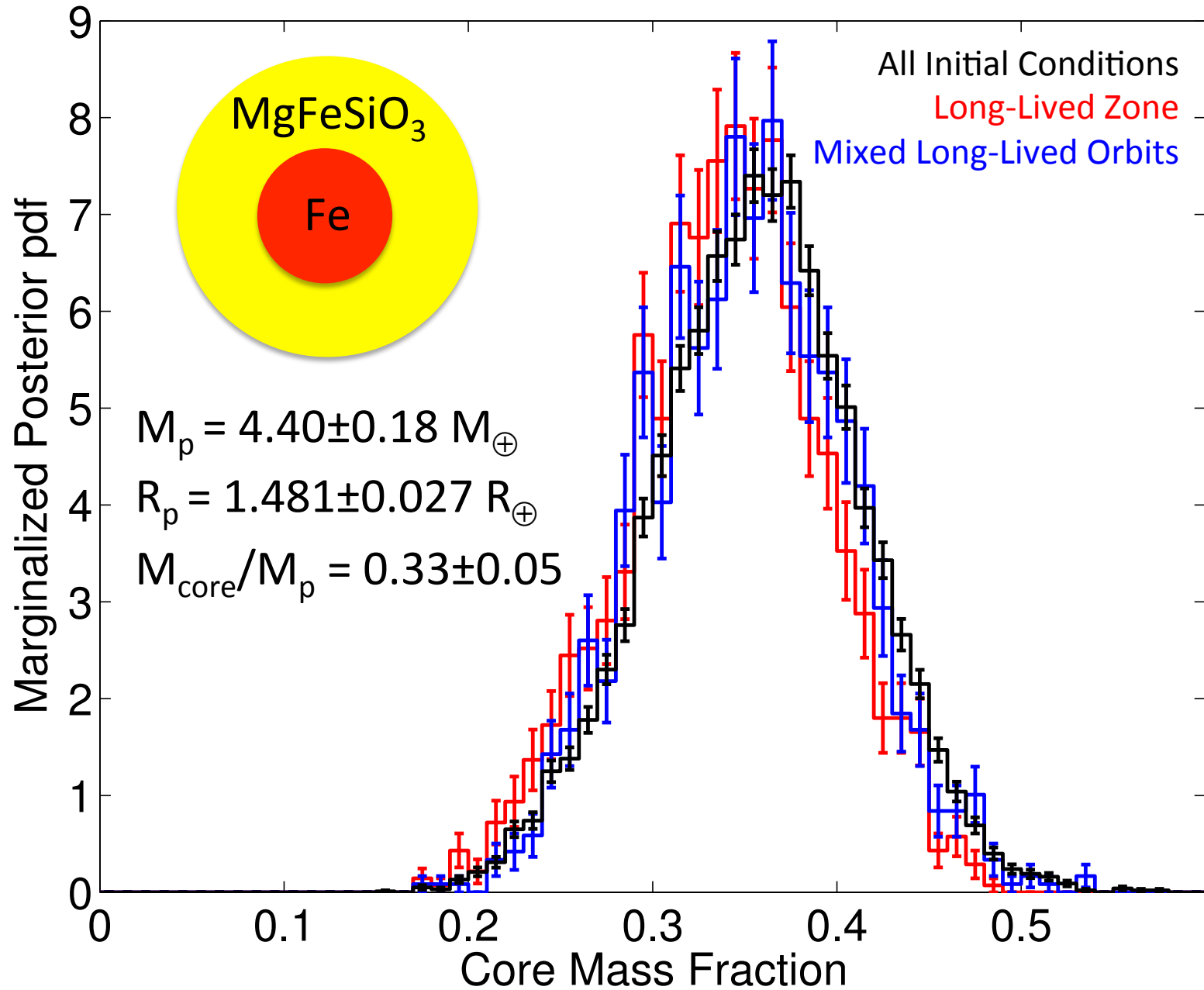
Lagrange Instability Eliminates some Solutions allowed by *Kepler* Data, Refining Measured Parameters



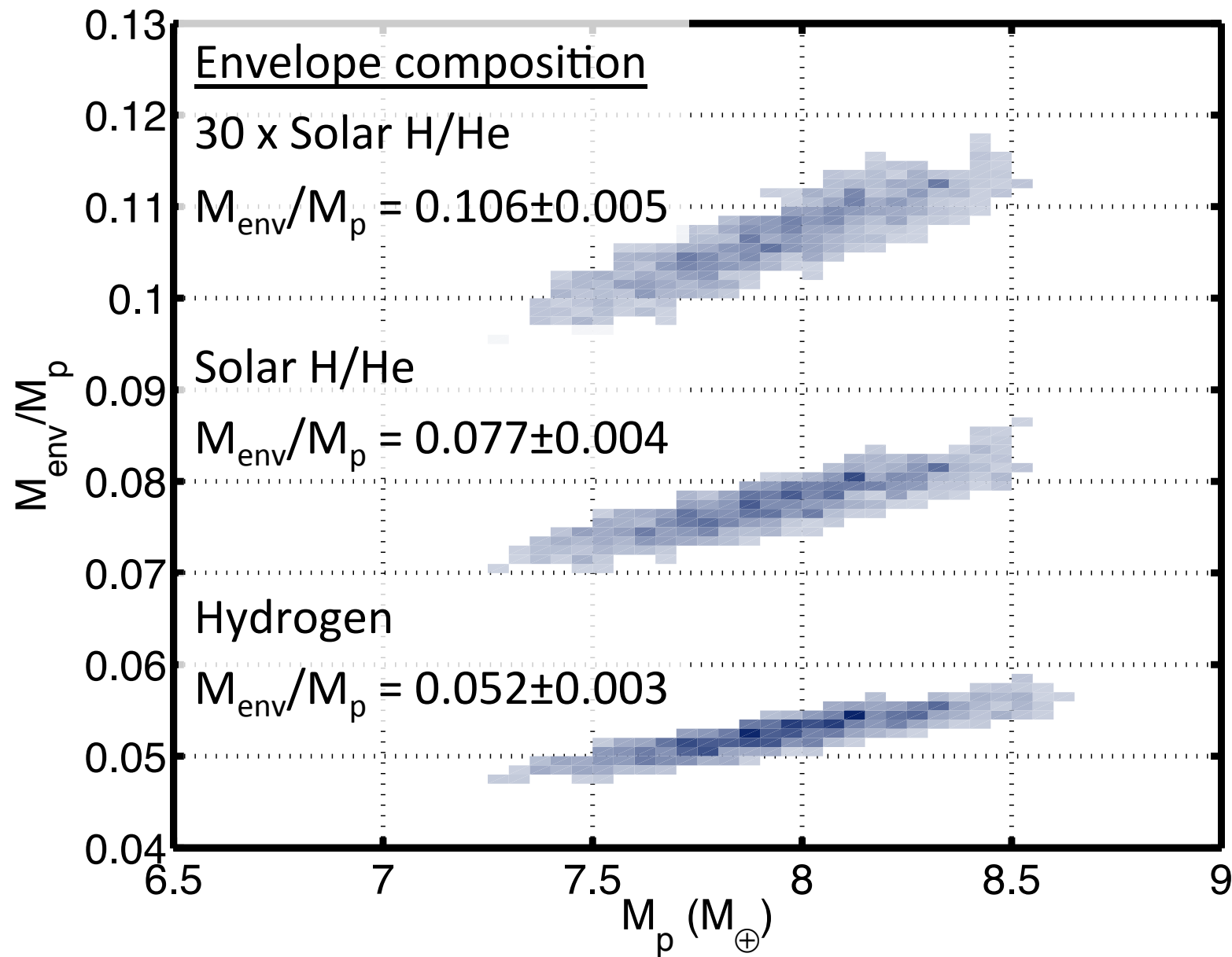
Kepler-36 b Mass Measured within 4.2%, Radius Measured within 1.8%



Kepler-36 b is Consistent with an Earth-like Composition



Compositional Constraints on Kepler-36 c



Main Take Away Points

- Kepler-36 b is the rocky exoplanet with the best constraints on its mass and radius: its mass is known within 4.2%, while the radius is known to 1.8%
- Kepler-36 b's mass and radius are consistent with an Earth-like composition. An iron-enhanced Mercury-like composition is ruled out.
- In contrast, Kepler-36 c requires several percent of its mass in a hydrogen-rich envelope.

*KEPLER 36-c
IN THE SKY OF
KEPLER 36-b*



*MOON IN
THE SKY
OF EARTH*





Credit: NASA; Frank Melchior, frankacaba.com; Eric Agol

