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Title: The Composition of Exo-earths in the Habitable Zone
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Abstract: The Kepler Space Telescope has detected many planets and planetary candidates down to terrestrial sizes. However, the masses of the smallest planets remain largely unknown, because they are inaccessible by current radial velocity techniques. In addition, an intrinsic degeneracy exists in the mass-radius relationship, allowing a large range of theoretical masses for each radius depending on planetary composition.

As part of an ongoing effort, we present detailed accretion simulations of wet and dry planetary embryos and planetesimals, focusing on water delivery within the habitable zone. We take into account the pre-main sequence location of the snow line and different initial water/rock ratios. We use a Monte Carlo approach to quantitatively compare the synthetic planet populations with planet detection statistics, including those from the Kepler Space Telescope. Our goal is to constrain the composition of terrestrial planets in the habitable zone and to explore the probability distribution of volatile abundances for the lowest mass planets detected with Kepler.

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