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Unveiling the Planet Population at Birth

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Recent Kepler data has shown that the radius distribution of small, close-in exoplanets is bimodal. Such bimodality was expected from photoevaporation models of close-in super-Earths, where some planets are stripped of their primordial H/He atmospheres, whilst others retain them. We present a hierarchical inference model on the distribution of Kepler planets using the photoevaporation evolution model. This approach is used to place key constraints on the planetary distributions for core composition, core mass and initial envelope mass-fraction, as well as test other models of planet evolution such as core-powered mass-loss. This new information has interesting implications on planet formation models and also hints at additional atmospheric mass-loss mechanisms.