



Composition of Rocky Hot Super-Earth Atmospheres

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The search for extrasolar planets has resulted in the discovery of super-Earths, with masses between 1 and 10 Earth masses. Regarding the orbital distances, some of these planets are very close to its star, at distances much less than Mercury to the Sun. Since no such planets exist in our solar system, the atmospheric composition of these hot rocky planets remains largely unknown. In this work, we present a simple approach to evaluate the atmospheric composition of hot rocky planets by assuming different types of planetary composition and using corresponding model calculations. To explore hot atmospheres above 1000 K, we model the vaporization of silicate magma and estimate the range of atmospheric compositions according to the planet's radius and semi-major axis for the *Kepler* February 2011 data release. Our results show 5 atmospheric types for hot, rocky super-Earth atmospheres, strongly dependent on the initial composition and the planet's distance to the star. We provide a simple set of parameters that can be used to evaluate atmospheric compositions for current and future candidates provided by the *Kepler* mission and other searches.