



Analytical model of Sodium, Calcium and Hydrogen exospheres of CoRoT7b -like planets

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A parametric model of the elongated exospheres of CoRoT-7b -like planets is presented here. A numerical, Monte-Carlo model is used to determine the trajectories of ejected particles, calculated by using the full equation of motion. These are accumulated into a matrix to obtain the spatial distributions of exospheric particles. Then, an analytical model is obtained by fitting the numerical data with parametric functions.

We focus on the Hydrogen, Sodium and Calcium exospheres that, due to the radiation pressure acceleration, extend in the anti-stellar direction and form a tail. We investigate the role of some physical parameters, like the planetary mass, radius, temperature and distance from the host star. Hence, we run several numerical simulations with different values of the planet-associated physical

quantities, studying the effect on the morphology of the exosphere for the various analytical-model parameters. In this way, we can

investigate the role of each physical source quantity separately. Since elongated exosphere may be detected in a occultation experiment, the results of such a study may be useful for a quick evaluation of the feasibility of such an observation.