



The geodesy experiment LaRa (Lander Radioscience, onboard ExoMars) and future radioscience experiments.

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The LaRa (Lander Radioscience) experiment on the lander platform of the ExoMars mission (the Humboldt Payload) on the surface of Mars is designed to obtain coherent two-way Doppler measurements from the radio link between the ExoMars lander and the Earth over at least one third of a Martian year. Complementary to LaRa, there will be a radio link between the lander and the orbiter and a radio link between the orbiter and the Earth. With the objectives to determine interior properties of Mars as well as angular momentum changes induced by CO₂ sublimation-condensation process, we have simulated these Doppler measurements (the results are presented at EGU by Le Maistre et al.) and developed a strategy for reaching these goals. We have performed an error budget analysis in order to be able to use realistic noise level on the simulated data. We have set up a design for LaRa and realized a breadboard. We have further examined the possibilities to use all the Earth-lander-orbiter radio links for future missions, and in particular for the NEXT mission to Mars. The LaRa team: V. Dehant (PI), W. Folkner (Co-PI), D. Orban (IM), E. Renotte (PM); S. Asmar, J. Benoist, R. Biancale, J. Biele, F. Budnik, O. de Viron, B. Haeusler, S. Le Maistre, P. Lognonne, M. Menvielle, M. Mitrovic, M. Paetzold, L. Rossi, P. Rosenblatt, G. Schubert, T. Spohn, P. Tortora, T. Van Hoolst, O. Witasse