



Neutron detector ADRON-RM for ExoMars 2018

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ExoMars is a joint mission of the two agencies ESA and Roscosmos to explore the red planet. The 2018 mission of the ExoMars program will deliver a European rover and a Russian surface platform to the surface of Mars. The ADRON-RM is a neutron detector, once onboard European Rover, will provide investigation of the hydrogen content (present as adsorbed water, water ice, and/or OH and H₂O molecules in hydrated minerals) in the upper layer (~1 m) of the Martian subsurface. Full description will be presented.

The instrument contains two detectors based on the 3He proportional counters. Parallel measurements of thermal and epithermal neutrons allow to make the assessments of the subsurface structure of the Martian soil at the Rover's vicinity and to monitor the average water content. ADRON-RM will work in synergy with other instruments in the ExoMars experiment.

Neutron sensing of the Martian subsurface used for the first time since 2012 by the instrument Dynamic Albedo of Neutrons (DAN) on board the NASA's Mars Science Laboratory (MSL). According to the recent results from the DAN/MSL instrument, there is a significant correlation between active and passive measurements. Measurements by the ADRON-RM will make an important contribution at the comparison between results at the Gale crater and at the ExoMars Rover's landing site.