Geophysical Research Abstracts
Vol. 13, EGU2011-4443, 2011
EGU General Assembly 2011

Layering structure of Martian subsurface from DAN instrument onboard MSL rover

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The Dynamic Albedo of Neutrons instrument is designed to perform an in-situ analysis of the hydrogen content of the bulk Martian subsurface at depths of up to about 1 meter. Another goal of DAN experiment is testing of the layering structure of martian regolith with focusing on depth distribution of hydrogen bearing minerals or water.
DAN is part of Martian Science Laboratory (MSL) mission payload. Its flight model is already integrated onboard MSL rover and passing now final assembling and system tests prior launch which is scheduled for October of 2011.
The DAN inherits achievements of neutron activation analysis used for many years in different geological applications and will be first active neutron experi-ment launched in space. It includes Pulsing Neutron Generator (DAN/PNG) and Detectors/Electronics (DAN/DE). DAN/PNG is used to emit high energy neutrons in pulsing mode and irradiate martian subsurface. DAN/DE has the detectors of thermal and epithermal neutrons and associated electronics. DAN detectors are able to measure time profile of neutron albedo from martian subsurface produced by DAN/PNG. The shape and amplitude of the time profile(die away curve) strongly depend on presense of Hydrogen in the martian regolith.
Here we would like to present and discuss results of DAN field tests and calibrations made in 2008-2010. Major goals of these measurements were to estimate DAN detectors efficiency and deconvolve its sensitivity to the presense of different content of water in the subsurface.