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## EXOMARS 2022: PLANNED MEASUREMENTS OF ELECTROMAGNETIC RADIATION ON THE SURFACE OF MARS

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Dust grains in the Martian dust storms or dust devils may be electrically charged by triboelectric effects and laboratory experiments show that under specific conditions electric discharges might occur in the dusty Martian atmosphere. Remote measurements from the Earth using a 34-m Deep Space Network antenna have shown a non-thermal component of electromagnetic radiation from Mars which has been attributed to the effects of discharges in the dust storms but observations of the radar receiver onboard the Mars Express spacecraft showed no credible radio signals from Martian lightning between 4 and 5.5 MHz. Direct measurements of electromagnetic radiation on the surface of Mars are needed to solve this puzzle.

The Exomars 2022 Surface Platform instrumentation will include the Wave analyzer module, consisting of an assembly of magnetic and electric antennae and dedicated electronics, as a part of the Martian ground electromagnetic tool instrument. The module will be dedicated to the measurement of electromagnetic field fluctuations in the frequency band from 100 Hz to 8 MHz. We plan to experimentally investigate possible radio emissions of atmospheric origin generated by electrical discharges, as well as electromagnetic waves linked to the interactions of interplanetary plasma medium with the Martian ionosphere and magnetic anomalies.

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