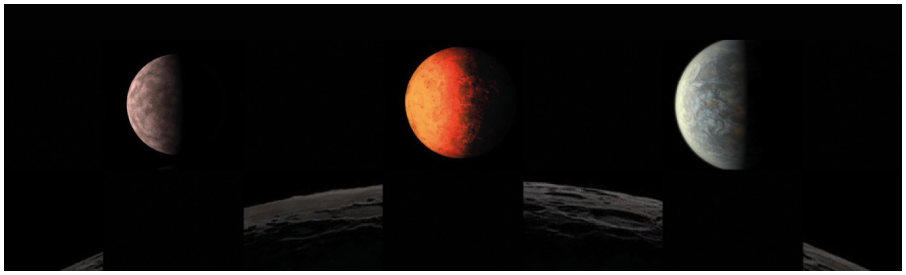

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The influence of dust on the radiance spectra of the Martian soil and atmosphere and the surface of Mercury

Friday 24 October 2025 12:30 (1 hour)

This work is an extension of the topic addressed in the article (M.I Błęcka; PSS, 2024) concerning the influence of the mineralogy of the Martian surface on the detectability of trace gases in its atmosphere. Currently, the modelling has been extended to include the presence of dust in the Martian atmosphere. The spectral range of the simulation is wide, from 3.0μm to 20μm, which requires the modelling of both scattering and thermal emission from the surface and dust. Some simulation results for various mineralogical compositions of dust are shown

The spectral range of the code used allows, after some modifications, simulations of the expected spectra from the MERTIS spectrometer (Bepi Colombo mission) operating in the 7-14μm range.

Unlike Mars, Mercury has a very rarefied atmosphere (exosphere), which only slightly alters the signal coming from the surface. The situation is different when dust appears above the surface, e.g. after a meteorite impact, which is a fairly common phenomenon on Mercury. The first attempts to model the radiance from Mercury in this situation are shown.

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