

IGARSS2000ABSTRACT

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ABSTRACTTITLE:

Low Frequency Radar Sounding Through Martian Ionosphere: Problems and A Proposed Solution

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ABSTRACTTEXT:

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In 2004, Mars Express will carry a radar sounder to Martian orbit to perform active subsurface and ionospheric sounding. The subsurface sounding unit, which has four channels with a bandwidth of one MHz in the frequency range of 1.3 to 5.5 MHz, will be used to probe the internal structure of the Martian subsurface to a depth of many kilometers. Due to the limited data rate from the spacecraft to earth, the collected data has to be processed by an onboard processor. This means, the processor needs to adaptively compensate for the dispersion introduced by the ionosphere using techniques that are suitable for real time implementation with limited onboard resources. In this work, we will first explain the generic difficulties in radar sounding at near plasma frequencies and our approach to overcome them. Also, a series of simulated radar signals which are calculated based on our current understanding of the Martian ionosphere and Martian topography will be presented.

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