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Magnetic Topology of the Martian Magnetosphere-Solar Wind Interaction (Invited)

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Mars arguably represents the most complex magnetospheric topology explored in the solar system to date. The Martian obstacle to the solar wind includes significant contributions from both currents induced in the ionosphere by the interaction, plus magnetic field interactions where the Martian crustal fields and interplanetary field exert control. The balance between these depends on several factors including the solar ionizing (EUV) flux. Comparison of MAVEN in-situ observations along its orbit with simulations of the solar wind interaction have confirmed the latter's ability to provide a first order global description, however other observable consequences of this topology exist, including: 1) External suprathermal particle access routes; 2) Patterns of ionospheric ions and photoelectron trapping and outflow in the solar wind wake; 3) magnetotail field polarity patterns and connectivities; 4) Magnetic reconnection geometries. We review the status of observations that support the global picture provided by the models, and the implications for previously held paradigms.