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火星感应磁场模型及其磁力线分布

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A model of Martian induced magnetic field and the distribution of magnetic field lines

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摘要 参考文献 相关文章

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摘要 本文利用火星具有电离层而无内禀磁场的特点以及它与太阳风相互作用的性质,通过适当的假设,建立了火星感应磁场
建立如下,利用电流连续的特性: $\Delta\cdot j=0$ (j为感应电流)以及对火星磁层中的电流体系分布的合理假设给出电流,并由毕
定理得到火星周围的磁场强度的表达式;利用我们自编的磁力线跟踪程序由求得的磁场强度得到火星周围的磁力线分布.我们
此火星磁场模型得到的火星周围的磁力线分布与卫星观测的结果以及其他方法得到的结果符合的很好.

关键词: 火星 内禀磁场 感应磁场 电离层 磁层顶 电流片

Abstract: Based on the facts that there is an ionosphere above the solid Mars but there is no intrinsic
field inside its solid body, and also the characteristic of the interaction between the solar wind and Maria
ionosphere, a model of Martian induced magnetic field is proposed. The model is as follows, according to
conservation of current: $\Delta\cdot j=0$ (where j is the induced current) and appropriate assumptions on the
distribution of the current of Martian Magnetosphere, the expressions of Martian magnetic field can be ol
through Biot-Savart theorem and the distribution of Martian magnetic field lines can be obtained through
of our program of tracing magnetic field lines.We find that the results obtained via the model of magnetic
consistent with observational results from satellite and the results gained by using other methods.

Keywords: Mars Intrinsic magnetic field Induced magnetic field Ionosphere Magnetopause Curr
sheets

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