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论文

不考虑磁层顶磁重联的全球三维MHD模型

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摘要： 本文介绍了一个新的磁层全球三维MHD模型，该模型可通过把IMF和地球磁场分开处理的方法“关闭”磁层顶的磁重联，从而可直观地显示不同IMF条件下磁层顶的IMF与地磁场的反平行区域，即磁重联最可能发生的地方，结果表示，IMFBx分量对磁层顶磁重联有重要影响。由于可关闭磁重联，该模型还可有效地研究有无磁重联时，太阳风对磁层位形（如晨-昏不对称性）、粒子输运等重要问题的影响，有助于揭示磁层物理现象的基本特性。

关键词： 磁层 MHD模拟 磁重联 行星际磁场

No Magnetic Reconnection at the Magnetopause: A New 3-D MHD Simulation Model

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Abstract: We have developed a new 3D MHD magnetosphere simulation model. One of the main features of this model is that it can

"close" the magnetic reconnection on the magnetopause by a method of dealing with IMF and the dipole magnetic field separately. By introducing the anti-parallel theory, this method can show the possible reconnection sites on the magnetopause distinctly like the gas-dynamic model. The results show that the IMF X component also has important influence on the magnetic reconnection on the magnetopause like the other two components. We suggest that this model may be helpful to the study of solar wind-magnetosphere interaction from a different point of shutting