Analysis and Design of Edge Heat Leakage from Spacecraft Multilayer Insulation
" /> The edge heat leakage will generate if the shields in multilayer insulation (MLI) can ' t form a closed system, thus producing certain effect on the performance of heat insulation. The two dimensional steady state and combined radiation/conduction heat transfer in MLI is modeled by using the finite element method to simulate the thermal loss from edge of MLI. The effects of design parameters such as mounting area, layer density, thermal conductivity and emissivity of pressure sensitive tape on the edge heat leakage are analyzed. Two cases that whether the boundary of MLI is covered or not are compared to decide which one is better in heat insulation. Based on the analysis results some useful designs that help to reduce thermal loss from edge of MLI are proposed.

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航天器多层隔热材料边缘漏热分析与设计

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