HTR-PM反应堆舱室自然对流特性数值分析

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摘要　为研究HTR-PM反应堆舱室自然对流特性，本文分别就黑度系数、辐射模型、流动模型及壁面处理方式等进行了讨论，摸索出适用于HTR-PM反应堆舱室自然对流数值分析的模型。利用该模型，对影响反应堆舱室自然对流的内外壁面温差、径向间距与环形空间高度比、水冷壁钢板高度与环形空间高度比、内外壁面半径比和内壁面温度不均匀分布等5个因素进行数值分析，并对部分因素给出相关的拟合公式，对于HTR PM反应堆舱室设计、分析具有一定的参考价值。

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Numerical Analysis of Natural Convection in HTR-PM Reactor Cabin

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Abstract　In order to study natural convection in HTR-PM reactor cabin, radiation coefficient, radiation model, flow model and near wall treatment were discussed to explore suitable model used for numerical analysis of natural convection in HTR-PM reactor cabin. Using this model, temperature difference of inner and outer wall, ratio of gap and height in annulus, ratio of cooling wall height and height in annulus, ratio of inner and outer wall radius and temperature distribution were analyzed. Correlations were given for some factors. All these will be reference for design and analysis of HTR-PM reactor cabin.

通讯作者