数学与系统科学研究院

计算数学所学术报告

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报告题目：

Some multiscale methods for elliptic equations in high-contrast heterogeneous media

邀请人： 明平兵研究员

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计算数学所报告厅

Abstract：

In this talk, we present multiscale methods for high–contrast elliptic problems where the media properties change dramatically. The disparity in the media properties introduces an additional scale that needs to be resolved in multiscale simulations. The main idea of our approach is to approximate the solution of the high–contrast problem by the solutions of the problems formulated in reduced–contrast media. In this approach, a rapidly converging sequence? is proposed where only problems with lower contrast are solved. It was shown that this sequence possesses the convergence rate that is inversely proportional to the reduced–contrast. This approximation allows choosing the reduced–contrast problem based on the coarse–mesh size. The presented approaches are limited to the cases where there are sharp changes in the contrast (i.e., the high–contrast can be represented by piecewise constant functions with disparate values).
This is a joint work with Yalchin Efendiev.