

Multiscale model reduction for neutron diffusion equation

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Construction of multiscale method for neutron diffusion equation is provided. The neutron diffusion approximation is mostly used for reactor analysis and applied in most engineering calculation codes. The solution method is based on the use of a generalized multiscale finite element method. The main idea is to create local solutions that can be used to effectively solve on a coarse grid. Numerical results show that multiscale basis functions can well take into account the small-scale characteristics of the medium and provide accurate solutions.