

论文

A NOTE ON THE SPECTRUM OF NEUTRON TRANSPORT OPERATOR IN A SLAB WITH GENERALIZED BOUNDARY CONDITIONS

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摘要 The spectrum of neutron transport operator A in an arbitrary non-homogeneous slab geometry is discussed in consideration of anisotropic scattering and fission. Under the assumptions that the boundary reflection coefficient function $\alpha(v, \mu), \gamma(v, \mu)$ and the scattering-fission kernel $k(x, v, v', \mu, \mu')$ are bounded measurable, and the total collision frequency $\nu \Sigma(x, v)$ is square integrable, it is shown that A has at most finite spectrum points in any strip $\{\lambda = \beta + i\tau \mid \beta_1 \leq \beta \leq \beta_2\}$, where $\beta_2 > \beta_1 > \lambda^*$, with λ^* the essential infimum of $\nu \Sigma(x, v)$. Finally, the asymptotic expansion of the solution for the time-dependent equation $(dN)/(dt) = AN, N(0) = N_0$ is given as a corollary.

关键词 [Neutron transport operator, slab geometry](#)

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Abstract The spectrum of neutron transport operator A in an arbitrary non-homogeneous slab geometry is discussed in consideration of anisotropic scattering and fission. Under the assumptions that the boundary reflection coefficient function $\alpha(v, \mu), \gamma(v, \mu)$ and the scattering-fission kernel $k(x, v, v', \mu, \mu')$ are bounded measurable, and the total collision frequency $\nu \Sigma(x, v)$ is square integrable, it is shown that A has at most finite spectrum points in any strip $\{\lambda = \beta + i\tau \mid \beta_1 \leq \beta \leq \beta_2\}$, where $\beta_2 > \beta_1 > \lambda^*$, with λ^* the essential infimum of $\nu \Sigma(x, v)$. Finally, the asymptotic expansion of the solution for the time-dependent equation $(dN)/(dt) = AN, N(0) = N_0$ is given as a corollary.

Key words [Neutron transport operator](#) [slab geometry](#) [generalized boundary conditions](#) [spectrum](#) [asymptotic expansion](#)

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