

Asadzadeh, Mohammad**A finite element method for the neutron transport equation in an infinite cylindrical domain.**(English) [Zbl 0918.65092](#)

SIAM J. Numer. Anal. 35, No. 4, 1299-1314 (1998).

Author's abstract: We study the spatial discretization, in a fully discrete scheme, for the numerical solution of a model problem for the neutron transport equation in an infinite cylindrical domain. Based on using an interpolation technique in the discontinuous Galerkin finite element procedure, we derive an almost optimal error estimate for the scalar flux in the L_2 -norm. Combining a duality argument applied to the above result with the previous semidiscrete error estimates for the velocity discretizations, we obtain globally optimal error bounds for the critical eigenvalues.

Reviewer: [H.Brunner \(St.John's\)](#)**MSC:**[65R20](#) Numerical methods for integral equations[45K05](#) Integro-partial differential equations[82C70](#) Transport processes in time-dependent statistical mechanicsCited in **10** Documents**Keywords:**

neutron transport equation; spatial discretization; finite element; convergence rate; Besov spaces; interpolation spaces; scalar flux; duality algorithm; critical eigenvalue; error estimate

Full Text: [DOI](#)