Recursive Integral Method for the Nonlinear Non-selfadjoint Transmission Eigenvalue Problem

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The transmission eigenvalue problem is an eigenvalue problem that arises in the scattering of time-harmonic waves by an inhomogeneous medium of compact support. Based on a fourth order formulation, the transmission eigenvalue problem is discretized by the Morley element. For the resulting quadratic eigenvalue problem, a recursive integral method is used to compute real and complex eigenvalues in prescribed regions in the complex plane. Numerical examples are presented to demonstrate the effectiveness of the proposed method.