

Uniform resolvent estimate for stationary dissipative wave equations in an exterior domain and their application to the principle of limiting amplitude

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Abstract Let Ω be an exterior domain of \mathbb{R}^N ($N \geq 2$) with star-shaped smooth boundary $\partial\Omega$. We consider the stationary problem of the form

$$(1) \quad \begin{cases} (-\Delta - i\kappa b(x) - \kappa^2) u(x) = f(x), & x \in \Omega, \\ u(x) = 0, & x \in \partial\Omega, \end{cases}$$

where $b(x)$ is a real-valued bounded smooth function on Ω and $\kappa \in \mathbb{C}$ denotes a spectral parameter. Moreover, it is assumed that the function $b(x)$ satisfies certain decay conditions.

The main result is the uniform resolvent estimate for (1). As an application of it, the principle of limiting amplitude follows. The above results are based on a joint work with Kiyoshi Mochizuki (Emeritus, Tokyo Metropolitan University).