

Melrose, Richard

Polynomial bound on the distribution of poles in scattering by an obstacle. (English)

Zbl 0621.35073

Journ. Équ. Dériv. Partielles, St.-Jean-De-Monts 1984, Conf. No. 3, 8 p. (1984).

Let $\theta \subset R^n$, $n \geq 3$ odd be a smooth compact obstacle. In the Lax-Phillips scattering theory the scattering matrix for θ with Dirichlet, Neumann or Robin boundary condition is meromorphic in the complex plane. Let $\{\mu_j\}$ be the sequence of these poles repeated according to multiplicity and arranged to have $|\mu_j|$ non-decreasing. In this note it is shown that there is a constant C such that

$$(*) \quad N(r) = \max\{j; |\mu_j| \leq r\} < Cr^n + C.$$

The proof is similar to that in a previous paper by the author [J. Funct. Anal. 53, 287-303 (1983; Zbl 0535.35067)] for scattering by a potential with compact support by sufficiently simplified that this rather precise growth is obtained, of the same as for the interior problem (after assistance from D. Jerison).

MSC:

35P25 Scattering theory for PDEs

Cited in **3** Reviews
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Keywords:

smooth compact obstacle; Lax-Phillips scattering theory; scattering matrix; Dirichlet, Neumann or Robin boundary condition; meromorphic; scattering by a potential

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