

Yafaev, D. R.

On resonance scattering by a negative potential. (Russian. English summary) Zbl 0557.35094
Zap. Nauchn. Semin. Leningr. Otd. Mat. Inst. Steklova 138, 184-193 (1984).

Summary: The dependence on a coupling constant $g > 0$ of the total cross-section $\sigma(g)$ (at a fixed energy of a particle) for quantum scattering by a potential $gV(x)$ with a compact support is considered. It is found that for a central potential with a nontrivial negative part $\sigma(g)$ is unbounded for some sequence $g_l \rightarrow \infty$. Moreover, the lower estimate $\sigma(g_l) \geq Cg_l^{1/2}$, $C > 0$, holds. On the contrary, for a positive repulsive potential (not necessarily central) the total cross-section is shown to be bounded uniformly in g .

MSC:

- [35Q99](#) Partial differential equations of mathematical physics and other areas of application
- [35P25](#) Scattering theory for PDEs
- [81U99](#) Quantum scattering theory

Cited in **1** Review
Cited in **2** Documents

Keywords:

potential with compact support; quantum scattering; lower estimate; positive repulsive potential

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