

Inverse problem for harmonic oscillator perturbed by potential on the half-line

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ABSTRACT. Consider the harmonic oscillator perturbed by a potential on the half-line. We solved the inverse problem (including characterization) for the mapping: potential — spectral data, where the spectral data = the corresponding eigenvalues plus the norming constants. The proof is based on nonlinear functional analysis combined with sharp asymptotics of spectral data in the high energy limit for complex potentials. We use ideas from the analysis of the inverse problem for the case of the real line [1].

We apply this results to the 3D harmonic oscillator perturbed by a potential (depending from radius only). This is the joint paper with D. Chelkak.

References

[1] D. Chelkak, P. Kargaev, E. Korotyaev: The inverse problem for the harmonic oscillator perturbed by a potential. *Characterization, Commun. Math. Phys.* 249(2004), 133 - 196