Solving inverse problems by means Fourier analysis

(Talk)

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(joint work with Vladimir Vladičić, Olivera Marković and Rade Lazović)

This study analysis the limit task

$$-y''(x) + q(x)y(\alpha x) = \lambda y(x) \qquad 0 < \alpha \leq 1, \quad q \in AC[0,\pi] \qquad (1)$$

$$y(0) = y(\pi) = 0 \qquad (2)$$

Assuming that the series $\lambda_n, n \in N$ of eigenvalues of the task (1-2) is given, it is proved that the parameter α and the potential q, which is symmetric to point $\frac{\pi}{1+\alpha}$, are unambiguous. Apart from that, a parameter α calculation method is given, and the potential q is composed by means of Fourier trigonometric coefficients.

MSC2010: 34B24, 34A55.

Keywords: inverse problem, Fourier trigonometric coefficients.

Section: Operator Algebra nd Functional Analysis.

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