AMIROV R.Kh., CAKMAK Y.

TRACE FORMULA FOR THE STURM-LIOUVILLE OPERATOR WITH SINGULARITY AT $x=0$

Keywords: Trace formula, spectrum.
AMS subject classifications. 35J10, 35J40, 35K35.

Abstract

Let $\mu_1, \mu_2, \ldots, \mu_n, \ldots$ *be the Dirichlet spectrum of the operator* $-d^2/dx^2 + q(x)$ *acting on* $L^2(0,\pi)$. *In the special case where* $q(x)=0$, $\mu_n = n^2$. *In the [1] and others discovered the asymptotic formula*

$$\mu_n = n^2 + \frac{1}{\pi}\int_0^\pi q(x)dx + O(n^{-2})$$

and the trace formula

$$\sum_n \left[\mu_n - n^2\right] = \frac{q(0)+q(\pi)}{4}.$$

provided that $\int_0^\pi q(x)dx = 0$, *where* $q(x) \in C^2[0,\pi]$. *These are beautiful formulas with many application for example in solving inverse problems. In this work, the above mentioned problem has been studied for a Sturm-Liouville operator with the potential* $\frac{A}{x} + \frac{\delta}{x^p} + q(x)$ *(* A, δ *is real and* $p \in (1,2)$*) singularity at* $x = 0$.

Əmirov R.X., Çakmak Y.

$x=0$ -DA SİNQULYARLIĞI OLAN ŞTURM-LİUVİLL OPERATORUNUN İZ DÜSTURU

Məqalədə $x=0$ nöqtəsində sinqulyarlığı olan Şturm-Liuvill operatorunun izi hesablanmışdır.