Etibar S. PANAKHOV

ON INVERSE PROBLEM FOR SINGULAR STURM-LIOUVILLE OPERATOR FROM TWO SPECTRA

Abstract

In the paper an inverse problem by two given spectrum for second order differential operator with singularity of type $\frac{2}{r}+\frac{l(l+1)}{r^2}$ *in zero point (where* l *is a positive integer or zero), is studied. It is well known that the two spectrum* $\{\lambda_n\}$ *and* $\{\mu_n\}$ *uniquely determine the potential function* $q(r)$ *in a singular Sturm-Liouville equation defined on interval* $(0,\pi]$.

One of the aims of the paper is to prove the generalized degeneracy of the kernel of integral equation in inverse problem. In particular we obtain a new proof of Hochstadt's theorem concerning the structure of the difference $\tilde{q}(r)-q(r)$.