

A LOCAL BORG-MARCHENKO THEOREM FOR COMPLEX POTENTIALS

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Consider the Sturm-Liouville problem given by the equation $-y'' + qy = \lambda y$ on $[0, \infty)$ and the boundary condition $y(0) = 0$. The famous Borg-Marchenko theorem states that the associated Weyl-Titchmarsh m -function determines uniquely the potential q when q is real. The local version states that q is determined on $[0, a]$ if the m -function is known up to errors of the order of $\exp(-2a\Re(\sqrt{-\lambda}))$ (where $\Re(\sqrt{-\lambda})$ is positive) as λ tends to infinity along some non-real ray.

We show that under certain very general restrictions on q an analogous result holds also for complex-valued potentials.

This is joint work with B. M. Brown and R. A. Peacock.