

# 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  $\lambda$  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.