

UNIQUENESS THEOREMS IN INVERSE SPECTRAL THEORY

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The celebrated Borg-Marchenko uniqueness theorem says that given the spectral measure of a selfadjoint operator generated by a Sturm-Liouville operator $-u'' + qu = \lambda u$, then the potential q is determined. I will review this result and then discuss uniqueness theorems of the same nature, but for more general situations. I will discuss matrix-valued equations, higher order equations, the general Sturm-Liouville equation $-(pu')' + qu = \lambda wu$ and so called left-definite Sturm-Liouville equations. For some of these results method similar to those originally employed by Borg may be used, but some results depend on a new approach, using a generalized version of the classical Paley-Wiener theorem for the Fourier transform.