Weyl–Titchmarsh theory for Schrödinger operators with strongly singular potentials

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We develop Weyl–Titchmarsh theory for Schrödinger operators with strongly singular potentials such as perturbed spherical Schrödinger operators (also known as Bessel operators). It is known that in such situations one can still define a corresponding singular Weyl m-function and it was recently shown that there is also an associated spectral transformation. Here we will give a general criterion when the singular Weyl function can be analytically extended to the upper half plane and prove a local Borg–Marchenko type uniqueness result. Our criteria will in particular cover the aforementioned case of perturbed spherical Schrödinger operators.

The talk is based on a joint work with A. Kostenko and A. Sakhnovich.