EXTENSION TECHNIQUE FOR COMPLETE BERNSTEIN FUNCTIONS OF THE LAPLACE OPERATOR

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In joint work with Mateusz Kwaśnicki we discuss representation of certain functions of the Laplace operator Δ as Dirichlet-to-Neumann maps for appropriate elliptic operators in half-space. A classical result identifies $(-\Delta)^{1/2}$, the square root of the d-dimensional Laplace operator, with the Dirichlet-to-Neumann map for the (d+1)-dimensional Laplace operator $\Delta_{t,x}$ in $(0,\infty) \times \mathbb{R}^d$. Caffarelli and Silvestre extended this to fractional powers $(-\Delta)^{\alpha/2}$, which correspond to operators $\nabla_{t,x}(t^{1-\alpha}\nabla_{t,x})$. We provide an analogous result for all complete Bernstein functions of $(-\Delta)$ using Krein's spectral theory of strings.