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THE SPECTRUM OF SOME HARDY KERNEL MATRICES

A Hardy kernel is an integral kernel $k(x, y)$ in two variables $x > 0$ and $y > 0$ which is homogeneous in (x, y) of degree -1. Integral operators on the positive semi-axis with Hardy kernels are explicitly diagonalisable by the Mellin transform. It is however by no means clear how to diagonalise the infinite matrix $\{k(n, m)\}$ which is obtained by restricting a Hardy kernel onto natural numbers n, m . In the talk, I will describe one specific explicit one-parametric family of Hardy kernels k when the spectral analysis of $\{k(n, m)\}$ can be carried out. This matrix appears in the analysis of composition operators on the Hardy space of Dirichlet series; I will explain this connection at the end of the talk. This is joint work with Ole Brevig (Trondheim) and Kalle Perfekt (Reading).