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Local properties of Hilbert spaces of Dirichlet series

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We show that the asymptotic behavior of the partial sums of a sequence of positive numbers determine the local behavior of the Hilbert space of Dirichlet series defined using these as weights. This extends results recently obtained describing the local behavior of Dirichlet series with square summable coefficients in terms of local integrability, boundary behavior, Carleson measures and interpolating sequences. As these spaces can be identified with functions spaces on the infinite-dimensional polydisk, this gives new results on the Dirichlet and Bergman spaces on the infinite dimensional polydisk, as well as the scale of Besov-Sobolev spaces containing the Drury-Arveson space on the infinite dimensional unit ball. We use both techniques from the theory of sampling in Paley-Wiener spaces, and classical results from analytic number theory.

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