

Hardy type spaces of general Dirichlet series

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A general Dirichlet series is a formal series $\sum a_n e^{-\lambda_n s}$, where s is a complex variable, (a_n) is a complex sequence of coefficients, and (λ_n) a frequency, i.e. a strictly increasing non-negative real sequence which tends to $+\infty$. Choosing $\lambda_n = \log n$ leads to ordinary Dirichlet series $\sum a_n n^{-s}$. Due to an ingenious idea of H. Bohr the recent \mathcal{H}_p -theory of ordinary Dirichlet series is intimately linked with Fourier analysis on the infinite dimensional polytorus \mathbb{T}^∞ . For a fixed frequency (λ_n) and $1 \leq p \leq \infty$ we define Hardy spaces $\mathcal{H}_p(\lambda)$ of λ -Dirichlet series. Inspired by ideas of Bohr and Helson we indicate that in this more general situation a natural substitute of the polytorus \mathbb{T}^∞ is given by the Bohr-compactification of \mathbb{R} , and sketch how Fourier analysis on this group rules the \mathcal{H}_p -theory of general Dirichlet series.