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Abstract

For $\alpha \in (-\infty, \infty)$, let Q_α be the space of all measurable functions f on the real line R with

$$\sup_I |I|^{2\alpha-1} \int_I \int_I \frac{|f(x)-f(y)|^2}{|x-y|^{1+2\alpha}}\, dx\, dy < \infty,$$

where the supremum is taken over all finite intervals I of R. These spaces are new subspaces of BMO. In particular, if $\alpha \in (-\infty, 0)$, then $Q_\alpha = BMO$. The main purpose of this lecture is to discuss representation theorems for the Q spaces via: Poisson extension, Carleson like measures, square mean oscillation, wavelet coefficients, and dyadic counterpart.