VIRTUAL EAST-WEST SCV SEMINAR

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Idempotent Fourier multipliers acting contractively on H^p spaces

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I will present a joint work with Ole Fredrik Brevig and Kristian Seip. We describe the idempotent Fourier multipliers that act contractively on H^p spaces of the d-dimensional torus $\mathbb{T}^d$ for $d \geq 1$ and $1 \leq p \leq \infty$. When is not an even integer, such multipliers are just restrictions of contractive idempotent multipliers on L^p spaces, which in turn can be described by suitably combining results of Rudin and Ando. When $p = 2(n+1)$, with n a positive integer, contractivity depends in an interesting geometric way on n, d, and the dimension of the set of frequencies associated with the multiplier. Our results allow us to construct a linear operator that is densely defined on $H^p(\mathbb{T}^\infty)$ for every $1 \leq p \leq \infty$ and that extends to a bounded operator if and only if $p = 2, 4, \ldots, 2(n+1)$.
