

Marcin Bownik

University of Oregon, Eugene, USA

Parseval wavelet frames on Riemannian manifold

We construct Parseval wavelet frames in $L^2(M)$ for a general Riemannian manifold M and we show the existence of wavelet unconditional frames in $L^p(M)$ for $1 < p < \infty$. This is made possible thanks to smooth orthogonal projection decomposition of the identity operator on $L^2(M)$. We also show a characterization of Triebel-Lizorkin $F_{p,q}^s(M)$ and Besov $B_{p,q}^s(M)$ spaces on compact manifolds in terms of magnitudes of coefficients of Parseval wavelet frames. We achieve this by showing that Hestenes operators are bounded on $F_{p,q}^s(M)$ and $B_{p,q}^s(M)$ spaces on manifolds M with bounded geometry.

This talk is based on a joint work with Karol Dziedziul and Anna Kamont.