1121-42-34 **James Michael Wilson*** (jmwilson@uvm.edu), Department of Mathematics, University of Vermont, 16 Colchester Avenue, Burlington, VT 05405. *Bounded variation and almost-orthogonality.*

We prove a theorem which implies the following: Let $N \geq 2$ be arbitrary. Suppose that, for every dyadic cube Q in $\mathbf{R}^d$, we have N convex subsets $\{R_i(Q)\}_1^N$ of Q, and N complex numbers $\{c_i(Q)\}_1^N$, such that $|c_i(Q)| \leq 1$ and $\sum_1^N c_i(Q)|R_i(Q)| = 0$. Define $\tilde{h}_{(Q)}(x) \equiv |Q|^{-1/2}(\sum_1^N c_i(Q)\chi_{R_i(Q)}(x))$. Then, for all finite linear combinations $\sum \lambda_Q \tilde{h}_{(Q)}$,

$$\left(\int_{\mathbf{R}^d} \left|\sum \lambda_Q \tilde{h}_{(Q)}(x)\right|^2 dx\right)^{1/2} \leq (2+\sqrt{2})Nd\left(\sum |\lambda_Q|^2\right)^{1/2}.$$

We use our theorem to show stability of almost-orthogonal expansions of certain linear operators and stability of Lipschitz-smooth wavelet systems when they are “discretized”. (Received July 05, 2016)