

**Meeting:** 999, Nashville, Tennessee, SS 2A, Special Session on Wavelets, Frames, and Sampling

999-42-18

**John J. Benedetto\*** (jjb@math.umd.edu), Department of Mathematics, University of Maryland, College Park, MD 20742, **Alex Powell**, Department of Mathematics, Princeton University, Princeton, NJ, and **Ozgur Yilmaz**, Department of Mathematics, University of British Columbia, Vancouver, BC Canada. *Sigma-Delta quantization and finite frames.*

The theory of sigma-delta quantization is developed for finite frames for Euclidean space. This theory, including the role of finite frames, is motivated by several recent applications in communications theory and code design. Error estimates for various quantized frame expansions are derived, and, in particular, it is shown that Sigma-Delta quantizers outperform standard pulse code modulation (PCM) schemes. The results require some techniques from harmonic analysis, tiling theory, uniform distribution discrepancy theory, and classical algebraic number theory. (Received June 24, 2004)