983-43-676 **John J Benedetto** (jjb@math.umd.edu) and **Robert L Benedetto*** (rlb@cs.amherst.edu), Department of Mathematics and Comp. Sci., Amherst College, PO Box 5000, Amherst, MA 01002-5000. *Wavelets on p-adic fields and related groups.*

Let G be a locally compact abelian group with compact open subgroup H. The best known example of such a group is $G = \mathbf{Q}_p$, the field of p-adic rational numbers (as a group under addition), which has compact open subgroup $H = \mathbf{Z}_p$, the ring of p-adic integers.

Classical wavelet theories, which require a non-trivial discrete subgroup for translations, do not apply to G, which may not have such a subgroup. We introduce a theory of wavelets on G using coset representatives of the discrete quotient G/H as translating elements. We then construct some wavelet bases for $L^2(G)$. (Received September 19, 2002)