Emily J. King* (eking@math.umd.edu), 9 Memorial Dr., Room 1N124, Bethesda, MD 20892-0924, and Maria A. Skopina (skopina@ms1167.spb.edu). p-Adic Wavelets: Quincunx MRA and Biorthogonal Systems.

With an eye toward applications in quantum mechanics and other areas of science, much work has been done to generalize traditional analytic methods to $p$-adic systems. In 2002 the first paper on $p$-adic wavelets was published. Since then $p$-adic wavelet sets, multiresolution analyses, and wavelet frames have all been introduced. However, so far all constructions have involved dilations by $p$. This talk presents the first construction of a $p$-adic wavelet system with a more general matrix dilation (quincunx), as well as some recent characterizations of this type of system. Work being done to completely characterize biorthogonal $p$-adic systems associated with a multiresolution analysis will also be presented. (Received September 20, 2010)