1033-41-113   **Bin Han*** (`bhan@math.ualberta.ca`), Dept. of Mathematical and Statistical Science, University of Alberta, Edmonton, Alberta T6G 2G1, Canada. *A New Canonical Form of a Matrix Mask and Balanced Biorthogonal Wavelets.* Preliminary report.

In this talk, we shall present a new canonical form of a matrix mask which is very useful for studying vector subdivision schemes and refinable function vectors. Using the canonical form of a matrix mask, most techniques for studying scalar refinement equations and scalar refinable functions can be easily carried over to matrix refinement equations and refinable function vectors. Motivated by an interesting work of C. Chui and Q. T. Jiang on balanced biorthogonal wavelets, in this talk, we shall also discuss the structure of balanced biorthogonal wavelets and their approximation properties. The new canonical form of a matrix mask enables us to have a thorough understanding of balanced biorthogonal multiwavelets. In fact, we show that any multivariate biorthogonal multiwavelet can be transformed, using an invertible transform, into a balanced biorthogonal wavelet with its balancing order matching the approximation order of the original biorthogonal wavelet. The application of the new canonical form of a matrix mask to framelets obtained via Oblique Extension Principle (OEP) will also be discussed. (Received September 06, 2007)