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**Qingtang Jiang\*** (jiangq@ums1.edu), Dept. of Math and CS, University of Missouri - St. Louis, St. Louis, MO 63121. *Biorthogonal Wavelets with 6-fold Axial Symmetry for Hexagonal Data and Triangle Surface Multiresolution Processing*. Preliminary report.

In this talk we discuss the construction of highly symmetric FIR filter banks and compactly supported biorthogonal wavelets for hexagonal data/image and triangle surface multiresolution processing. Recently hexagonal data processing has attracted attention. Compared with the conventionally used square lattice, the hexagonal lattice has several advantages, including that it has higher symmetry. It is desirable that the filter banks for hexagonal data also have high symmetry which is pertinent to the symmetric structure of the hexagonal lattice. While in the field of CAGD, when the filter banks are used for surface multiresolution processing, it is required that the corresponding decomposition and reconstruction algorithms for regular vertices have high symmetry so that these algorithms could be used to process surfaces with extraordinary vertices.

In this talk, we will show that the 6-fold axial symmetry is the desired symmetry which the filter banks and wavelets should possess when they are used for hexagonal data and triangle surface multiresolution processing. We will also discuss the construction of 6-fold symmetric biorthogonal filter banks and the associated wavelets, with both the dyadic and square-root(3) refinements. (Received January 30, 2009)