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Qingtang Jiang* (jiangq@ums1.edu), Dept. of Math and Computer Sci., University of Missouri - St. Louis, St. Louis, MO 63121. *Construction of Filter Banks for Hexagonal Data Image Processing*. Preliminary report.

In this talk we will discuss the construction of 2-D orthogonal, biorthogonal filter banks, and tight affine frame filters for the hexagonal data image processing. More precisely, we concern the filters with the hexagonal symmetry, namely, the low-pass filter has the 3-directional symmetry, and the corresponding three high-pass filters have such a symmetry property that two of them are "rotated" by the third filter. First, we will show that the orthogonal filters considered by James Allen have the hexagonal symmetry. Then we will provide another structure of hexagonal symmetric biorthogonal filter banks which will attain better smoothness order. Finally, we will consider tight affine frame filters with the first three high-pass frame filters being the "ideal" high-pass filters which are appropriate shifts of the low-pass filter in the frequency domain. (Received September 10, 2007)