998-42-29 **Bin Han*** (bhan@math.ualberta.ca), Department of Math. and Stat. Sciences, University of Alberta, Edmonton, Alberta T6G 2G1, Canada, and **Qun Mo** (mo@math.ualberta.ca), Department of Math. and Stat. Sciences, University of Alberta, Edmonton, Alberta T6G 2G1, Canada. *Symmetric MRA Tight Wavelet Frames With Three Generators and High Vanishing Moments.* Preliminary report.

For any compactly supported symmetric refinable function $\phi \in L_2(R)$ with stable shifts, one can always construct ψ^1, ψ^2, ψ^3 such that

1. All ψ^1, ψ^2 and ψ^3 are compactly supported and are finite linear combinations of the functions $\phi(2 \cdot -k), k \in \mathbb{Z}$;

2. Each of ψ^1, ψ^2 and ψ^3 is either symmetric or antisymmetric;

3. $\{\psi^1, \psi^2, \psi^3\}$ generates a tight wavelet frame in $L_2(R)$, that is,

$$\|f\|^2 = \sum_{\ell=1}^{3} \sum_{j \in \mathbb{Z}} \sum_{k \in \mathbb{Z}} |\langle f, \psi^\ell_{j,k} \rangle|^2 \qquad \forall\ f \in L_2(R),$$

   where $\psi^\ell_{j,k} := 2^{j/2} \psi^\ell(2^j \cdot -k)$, $\ell = 1, 2, 3$ and $j, k \in \mathbb{Z}$;

4. Each of the wavelet functions ψ^1, ψ^2 and ψ^3 has the highest possible order of vanishing moments, that is, its order of vanishing moments matches the order of the approximation order provided by the refinable function ϕ.

We shall give an example to demonstrate that the assumption on stability of the refinable function ϕ cannot be dropped. Examples will be given to illustrate our results and construction. Related papers can be downloaded from http://www.ualberta.ca/∼bhan. (Received January 02, 2004)