Meeting: 999, Nashville, Tennessee, SS 2A, Special Session on Wavelets, Frames, and Sampling

999-42-291 **Dejun Feng**, Qsinghua University, China, **Long Wang*** (lwang@spsu.edu), Mathematics Department, Southern Polytechnic State University, 1100 South Marietta Parkway, Marietta, GA 30060-2896, and **Yang Wang**, Georgia Institute of Technology. *Finite tight frames.*

Finite tight frames are used widely for many applications. An important problem is to construct finite frames with prescribed norm for each vector in the tight frame. In this paper we provide a fast and simple algorithm for such purpose. Our algorithm employs the Householder transformations. For a finite tight frame consisting m vectors in $\mathbf{R}^n$ or $\mathbf{C}^n$ only $O(nm)$ operations are needed. In addition, we also study the following question: Given a set of vectors in $\mathbf{R}^n$ or $\mathbf{C}^n$, how many additional vectors, with possibly constraints, do you need to add in order to obtain a tight frame? (Received August 31, 2004)