1035-42-424　　　　**Marcin Bownik*** (`mbownik@uoregon.edu`), Department of Mathematics, Eugene, OR 97403-1222, and **Ziemowit Rzeszotnik**. *Construction and reconstruction of tight framelets and wavelets via matrix mask functions.*

In this talk we present construction procedures for tight framelets and wavelets using matrix mask functions in the setting of a generalized multiresolution analysis (GMRA). We show the existence of a scaling vector of a GMRA such that its first component exhausts the spectrum of the core space near the origin. The corresponding low-pass matrix mask has an especially advantageous form enabling an effective reconstruction procedure of the original scaling vector. We also prove a generalization of the Unitary Extension Principle for an infinite number of generators. This results in the construction scheme for tight framelets using low-pass and high-pass matrix masks generalizing the classical MRA constructions. We prove that our scheme is flexible enough to reconstruct all possible orthonormal wavelets. As an illustration we exhibit a pathwise connected class of non-MSF non-MRA wavelets sharing the same wavelet dimension function. (Received September 06, 2007)