

1137-41-73

Bin Han* (bhan@ualberta.ca), Dept. of Mathematical and Statistical Science, University of Alberta, Edmonton, Alberta T6G 2G1, Canada, and **Chenzhe Diao**. *Quasi-tight Framelets and Matrix Spectral Factorization*. Preliminary report.

Tight wavelet frames (i.e., tight framelets) have been extensively studied in the literature and employed in many applications such as image processing. However, not every refinable function can be used to construct tight framelets. In this talk we shall introduce the notion of quasi-tight framelets, which are dual framelets but behave almost identically as tight framelets. Then we show that the construction of quasi-tight framelets is closely linked to the matrix spectral factorization with constant signatures. As a consequence, we completely characterize compactly supported quasi-tight framelets with two framelet generators. We also show that from every compactly supported refinable function in $L_2(\mathbb{R})$, we can always construct a compactly supported quasi-tight framelet in $L_2(\mathbb{R})$ with the highest possible order of vanishing moments and with the minimum number of framelet generators. This is a joint work with Chenzhe Diao at the University of Alberta. (Received January 24, 2018)