

Polyphase matrix characterization of framelets on local fields of positive characteristic

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Abstract. An important tool for the construction of framelets on local fields of positive characteristic using unitary extension principle was presented by Shah and Debnath [Tight wavelet frames on local fields, Analysis, 33 (2013), 293–307]. In this article, we continue the study of framelets on local fields and present a polyphase matrix characterization of framelets generated by the extension principle.

1 Introduction

Along with the study of wavelet bases, there had been a continuing research effort in the study of tight wavelet frames (framelets) and have gained considerable popularity in recent times, primarily due to their substantiated applications in diverse and widespread fields of science and engineering. A framelet is a generalization of an orthonormal wavelet basis by introducing redundancy into a wavelet system. By sacrificing orthonormality and allowing redundancy, the framelets become much easier to construct than the orthonormal wavelets. The main tool for construction and characterization of wavelet frames are

2010 Mathematics Subject Classification: 42C40, 42C15, 43A70, 11S85

Key words and phrases: wavelet frame, framelet, wavelet mask, polyphase matrix, local field, extension principle, Fourier transform