

# WAVELET PACKETS ON LOCAL FIELDS

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**Abstract:** Using a prime element of a local field  $K$  of positive characteristic, the concepts of multiresolution analysis (MRA) and wavelet can be generalized to such a field. We prove a version of the “splitting lemma” for this setup and using this lemma we construct the wavelet packets associated with such MRAs. We show that these wavelet packets generate an orthonormal basis of  $L^2(K)$  by translations only. We also prove an analogue of the splitting lemma for frames and construct the wavelet frame packets in this setting. This is a joint work with Qaiser Jahan.