

Dilates of shift-invariant spaces on local fields

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Abstract. Let K be a local field of positive characteristic. We prove that if the space V of negative dilates of a Parseval wavelet of $L^2(K)$ has dimension function finite on a set of positive measure, then the intersection of the dilates of V is trivial. We also construct an example of a frame wavelet of $L^2(K)$ whose space of negative dilates is all of $L^2(K)$. The frame wavelet can be chosen to have frame bounds arbitrarily close to 1 and it has a dual frame wavelet.

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