

# Unconditional convergence for wavelet frame expansions

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We study unconditional convergence for wavelet frame expansions in  $L_p(\mathbb{R})$ .

Let  $\{\psi_{j,k}\}_{(j,k)\in\mathbb{Z}^2}$ ,  $\{\tilde{\psi}_{j,k}\}_{(j,k)\in\mathbb{Z}^2}$  be dual wavelet frames in  $L_2(\mathbb{R})$ , let  $\eta$  be an even, bounded, decreasing on  $[0, \infty)$  function such that  $\int_0^\infty \eta(x) \ln(1+x) dx < \infty$ , and  $|\psi(x)|, |\tilde{\psi}(x)| \leq \eta(x)$ . Then the series  $\sum_{j,k\in\mathbb{Z}} (f, \tilde{\psi}_{j,k}) \psi_{j,k}$  is unconditional convergent in  $L_p(\mathbb{R})$ ,  $1 < p < \infty$ .

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