Sparse continuous wavelet transforms via a wavelet-Plancherel theory

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It is well known that certain classes of signals can be effectively represented using a wavelet basis or a wavelet frame, keeping only a sparse number of coefficients. In this talk I will extend this approach to continuous wavelet systems. To overcome some of the challenges in the continuous realm, I will present an extension of the standard continuous wavelet theory, called the wavelet-Plancherel theory. Basing our sparse decomposition algorithm on the new theory, we can outperform naive sparse decomposition algorithms.