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T3.5-P5 **A Novel Approach for Signal Sparse Time-Frequency Representations**

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By exploiting the fact that most real-life signals are sparse in the time-frequency (TF) domain, a significant suppression of the unwanted cross-terms can be achieved in the signal TF representation. In this work, we propose a sparse reconstruction algorithm, based on the two-step iterative shrinkage/thresholding (TwIST) algorithm, in which the soft-thresholding value is adaptively determined by the fast intersection of the confidence intervals (FICI) rule. Firstly, the TF region with the lowest mean value is determined, and then the thresholding value is set to the largest sample within the region. Examples of synthetic and real-life (seismic) signals confirm that the performance of the proposed reconstruction algorithm is competitive to the performance of its state-of-the-art counterparts.