NON-LINEAR N-TERM APPROXIMATION BY 
NON-STATIONARY BIOORTHOGONAL WAVELET 
SYSTEMS BASED ON EXPONENTIAL B-SPLINES

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ABSTRACT
In this study, we are interested in non-linear $N$-term approximation by wavelet sums for a wide class of acoustic emission signals. Since the differential operators associated with polynomial-based stationary wavelets make all the poles at the origin in frequency domain, they do not consider the spectral features of signals. To overcome this drawback, the non-stationary biorthogonal wavelet systems based on the exponential B-spline are selected such that they can be tuned to the spectral characteristic of a given signal, yielding better approximation and sparser representation than classical wavelets at the strictly the same computational costs. This study is first concerned with constructing an algorithm for choosing thresholding values corresponding the given number $N$. Next, we discuss the approximation order of the suggested $N$-term approximation method. In order to illustrate our construction and results, we present some numerical examples, which confirms its powerful properties for the accuracy and sparse representation.

Keywords: Non-linear approximation, Non-stationary refinable function, Biorthogonal wavelet system, Exponential B-spline, Vanishing moment, Besov space, thresholding.

REFERENCES


