

PAPER TITLE

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Signal and image transforms represent an efficient tool for observed data analysis and further processing. The paper is devoted to the description of selected properties of Wavelet transform based upon the application of dilated and translated time limited functions enabling multiresolution signal analysis.

Wavelet functions used for signal analysis are derived from the initial function $W(t)$ forming basis for the set of functions

$$W_{m,k}(t) = \frac{1}{\sqrt{a}} W\left(\frac{1}{a}(t-b)\right) = \frac{1}{\sqrt{2^m}} W(2^{-m}t - k)$$

for discrete parameters of dilation $a = 2^m$ and translation $b = k 2^m$. Wavelet dilation is closely related to its spectrum compression allowing local and global signal analysis.

Selected results of wavelet transform use in environmental engineering and namely in the three dimensional interpolation and prediction of air pollution are discussed in the paper. Detail algorithms in MATLAB are presented as well.

Table 1: REQUIREMENTS FOR PROCEEDINGS SUBMISSION

Languages	English, Czech, Slovak
Page size	A4
Length	Abstract: 1 page (printed in ICTC Proceedings), Full paper: 5 MB (CD)
Format	PDF, all fonts included, filename=author's last name
Margins	Top and bottom: 2cm, left and right: 2.5cm
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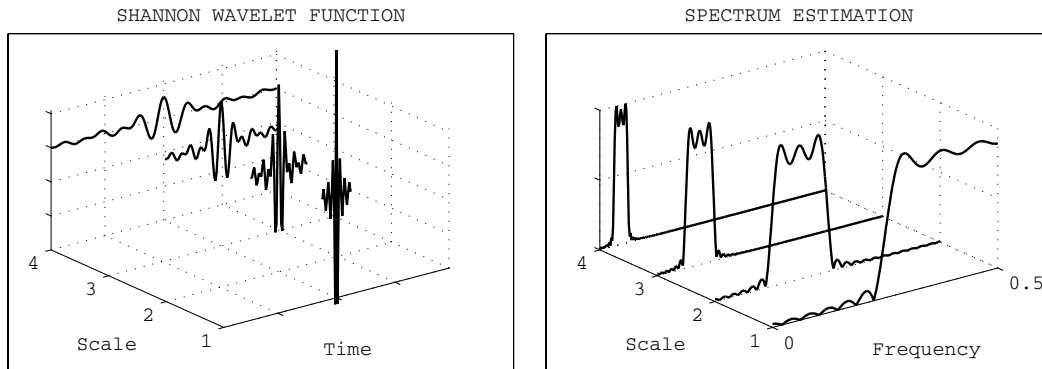


Figure 1: Shannon Wavelet function $W(t) = \sin(\pi t/2) \cos(3 \pi t/2)/(\pi t/2)$ and the effect of its dilation to spectrum compression