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Composition of wavelet and Fourier transforms

The paper presents the basic properties of the serial composition of two transformations: wavelet and Fourier. Two types of transformations were obtained because wavelet and Fourier transformations do not commute. The consequences of a phenomenon known as a “wavelet crime” are presented. Using of wavelets with compact supports in the frequency domain (e.g. Meyer wavelets) leads to the representation of signals as sparse matrices. Speech signals were used to test the presented transforms.

References

- [1] M. Ziółko, M. Witkowski, J. Gałka, *Composition of wavelet and Fourier transforms*, *Mathematica Applicanda* 46(1) (2018), 159–168, doi=10.14708/ma.v46i1.6376.