Composition of orthogomal base of the representable Wigner distribution using wavelets

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Wigner distribution is one of the methods to detect the time varying frequency characteristics of the signal, which has various advantages such as a high resolution and satisfaction of marginal condition compared to the short time frequency which is in wide use.

It is almost impossible, however, to construct the Wigner distribution that can be inverted to the time series. It is because of the cross term of the Wigner distribution that is generated by the interference of the different frequency components.

It is shown that by using the wavelets, it becomes possible to compose the orhogonal base of the space of the "representable" distribution. The method to invert the Wigner distribution to the time series is shown and its accuracy is shown by the numerical examples.