WWTF Project MA07-025

Frame Multipliers: Theory and Applications in Acoustics

Abstract

Frame Multipliers are a promising mathematical concept, which can be applied to retrieve desired information out of acoustic signals. The principal project applicant introduced them by successfully generalizing existing time-variant filter approaches.
This project aims to establish new results in the mathematical theory of frame multipliers, to integrate them in efficient digital signal processing algorithms and to make them available for use in 'real-world' acoustical applications. A multi-disciplinary and international cooperation has been established and will be extended in the project to create new significant impulses for the involved disciplines: mathematics, numerics, engineering, physics and cognitive sciences. Various acoustical applications like modelling of auditory perception, measurement of sound absorption coefficients and system identification of the head related transfer functions are included. The results of the project will allow their future integration into practical areas such as audio coding, noise abatement, sound quality design, virtual reality and hearing aids.

Keywords:
frame multiplier, time-variant filter, operator approximation, systemidentification, auditory perception, acoustical measurements

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Status: Completed (01.03.2008 - 31.08.2011) 42 months

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Further links about the involved persons and regarding the project you can find at
https://archiv.wwtf.at/programmes/mathematics/MA07-025