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AN ADAPTIVE PROCEDURE FOR DETERMINATING THE SUBJECTIVE TONALNESS

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ABSTRACT
If technical or environmental noises contain tonal components, they are more annoying than the same noises without tonal components. Several standards for the measurement and evaluation of tonalness have been suggested, e.g., the German DIN45681 (draft), or the American National Standard S1.13-1995 (ASA 118-1995). However, not all the data in the literature is in agreement with the prediction of the standards. In addition, no reliable procedure to measure the perceived tonalness exists.
In the present study, an interleaved-1-up-1-down 2-AFC- method for evaluating the subjective tonalness is presented, where different noises are matched in tonalness. Such a procedure allows to determine the subjective tonalness also for noises which could not be evaluated by the existing standards. The present study focuses on artificial noises comprising a noise floor (e.g. uniform exciting noise) and one or more tonal components.
Experimental data are presented, describing how tonalness depends on the frequency of the tonal component and the number of tonal components. Furthermore the tonalness of time fluctuating tonal components is investigated. An extension of the standards towards complex noises on the basis of the new experimental data will be discussed.
Note: for more information about this work, please contact the author(s).