

# Abstract for the EMPG 1999 Meeting in Mannheim

## Adaptive Methods for Estimating Multivariate Psychophysical Thresholds

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When analyzing the integration of information from different sensory channels, the determination of thresholds for stimuli with more than one physical parameter (e. g. binaural stimuli) may be necessary. Like in the univariate case, adaptive procedures can be used to estimate thresholds effectively.

An example is the estimation of a combined stimulus  $(X, Y)$  with a given detection probability  $p$  subject to the constraint that the detection probabilities of the isolated stimuli  $(X, 0)$  and  $(0, Y)$  should be equal, i. e. the point  $(X, Y)$  of the psychometric function  $f(x, y)$  with  $f(X, Y) = p$  such that  $f(X, 0) = f(0, Y)$  has to be determined.

Appropriate methods for this problem are multivariate Robbins-Monro-procedures, sequential methods on discrete lattices (generalized up-down methods) and an extension of Mukerjee's procedure. Additionally an algorithm for the isotonic regression problem on partial ordered sets is given, which is needed for Mukerjee's procedure and to get consistent estimators for up-down-methods.