

Linear Comparative Calibration with Correlated Measurements

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Abstract: The paper deals with the linear comparative calibration problem, i. e. the situation when both variables are subject to errors. Considered is a quite general model which allows to include possibly correlated data (measurements). From statistical point of view the model could be represented by the linear errors-in-variables (EIV) model. We suggest an iterative algorithm for estimation the parameters of the analysis function (inverse of the calibration line) and we solve the problem of deriving the approximate confidence region for the parameters. The confidence limits are derived using the concept of Kenward and Roger [5]. Their performance is investigated by simulation. The simulation results show that under reasonable restrictions the proposed confidence regions are very satisfactory for practical use.

Keywords: linear calibration; analysis function; regression with errors-in-variables; Kenward–Roger type approximation;

AMS Subject Classification: 60F05; 62E10;

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