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Estimating parameters of polynomial models with errors in variables and no additional information. (Russian, English) [Zbl 1374.62080](#)

Sib. Zh. Ind. Mat. 19, No. 3, 15-27 (2016); translation in *J. Appl. Ind. Math.* 10, No. 3, 322-332 (2016).

Summary: The problem of estimating a polynomial model with a classical error in the input factor is under consideration in the functional case. The nonparametric method recently introduced for estimating structural dependencies does not use any additional information, but it is very effortconsuming computationally and needs samples of large size. We propose some easier methods. The first approach is based on a preliminary estimation of the Berkson error variance under assumption of its normal distribution by the maximum likelihood method for a piecewise linear model. This estimate of variance is used for recovering the parameters of a polynomial by the methods of general and adjusted least squares. In case the error variance deviates from normal distribution, an adaptive method is developed that is based on the generalized lambda distribution. These approaches were applied for solving the problem of knowledge level evaluation.

MSC:

[62J02](#) General nonlinear regression

[62F35](#) Robustness and adaptive procedures (parametric inference)

Keywords:

model with errors in variables; generalized least squares; adjusted least squares; maximum likelihood; adaptive method; generalized lambda distribution

Software:

[VanHuffel](#)

Full Text: [DOI](#)

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