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Title:

**“Impact of the error structure on the design and analysis
of enzyme kinetic models”**

Abstract:

The statistical analysis of enzyme kinetic reactions usually involves models of the response functions which are well defined on the basis of Michaelis–Menten type equations. The error structure however is often without good reason assumed as additive Gaussian noise. This simple assumption may lead to undesired properties of the analysis, particularly when simulations are involved and consequently negative simulated reaction rates may occur.

In this study we investigate the effect of assuming multiplicative lognormal errors instead. While there is typically little impact on the estimates, the experimental designs and their efficiencies are decisively affected, particularly when it comes to model discrimination problems.