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Einladung zum Gastvortrag

# Assessing the Precision of Estimates of Variance Components

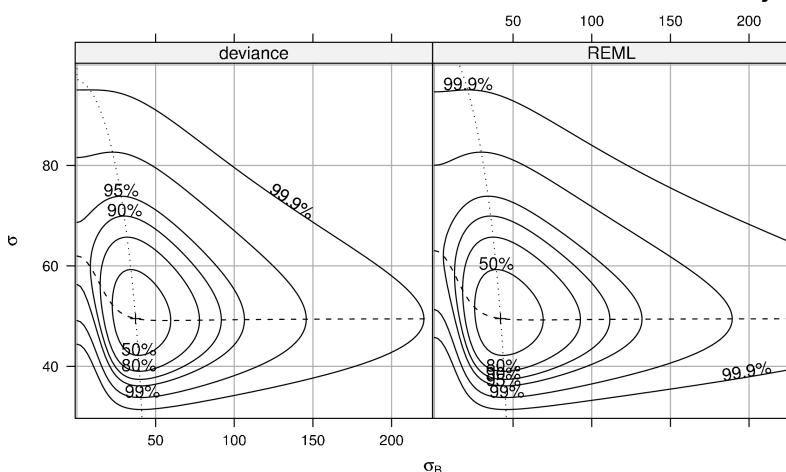
von

## Douglas Bates

Department of Statistics, University of Wisconsin

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Good statistical practice suggests that we should not only provide estimates of the parameters in a model but also provide a measure of the precision of these estimates, typically in the form of a standard error of the estimate. Such a summary is meaningful if the estimator is on a scale where an interval that is symmetric about the estimate would be a



suitable summary of the uncertainty. A notable exception to this practice of providing symmetric intervals is the confidence interval on a population variance based on the chi-square distribution. This interval recognizes that the distribution of the estimator of a variance is quite asymmetric. However, in much more complex models using variance components or, more generally,

linear mixed-effects models most statistical software reverts to providing an estimate of a variance component and a standard error of this estimate. We discuss why this is inappropriate and some alternatives based on profiling the log-likelihood or using Markov-chain Monte Carlo simulation.

*Douglas Bates is full professor of statistics at the University of Wisconsin. He is member of the R Development Core Team and (co-)author of the mixed effects functionality of both SPlus and R (functions lme(), nlme(), ...). He is also coauthor of the standard textbook „Mixed-Effects Models in S and S-Plus“.*

