Nonlinear optimal experimental design based on the SANCR method

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Abstract

In parameter estimation problems an important issue is the approximation of the confidence region of the estimated parameters. Especially for models based on differential equations, the needed computational costs require particular attention. For this reason, in many cases only linearized confidence regions are used. Their advantage is the low computational cost of the linearized confidence regions. However, a critical limitation is their often insufficient accuracy. To combine high accuracy and low computational costs, we have developed a method that uses only successive linearizations in the vicinity of an estimator. To accelerate the process, a principal axis decomposition of the covariance matrix of the parameters is employed. The method is called Successive Approximation of Nonlinear Confidence Regions (SANCR) [**?**]. We introduce this method in context of nonlinear optimal experimental design problems.

References

[1] T. Carraro and V. Olkhovskiy, Successive Approximation of Nonlinear Confidence Regions (SANCR), CSMO 2015, IFIP AICT 494, DOI:10.1007/978-3-319-55795-3_16, In Press