Sensitivity analysis on models with correlated inputs : application to chemical processes

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Kinetic models usually rest on the choice of a reactional scheme depending on various parameters that need to be estimated through practical experiments. The uncertainty on these parameters, due to the estimation procedure, then spreads on the model predictions.
In the case of independent input parameters, two techniques, Sobol and FAST, are widely used to perform a sensitivity analysis by computing sensitivity indices. But when the parameters are correlated, these methods can no longer be used.
We introduce here a new general method to compute sensitivity indices in the case of correlated parameters and illustrate its precision on a real chemical process.