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# Point process-based approach for the reliability analysis of systems modeled by costly simulators

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## Abstract

This work will focus on the issue of guaranteeing the good functioning of complex systems using expensive simulators. More precisely, it will address the construction of bounds allowing to majorise with a specified confidence the probability of occurrence of undesired events. In this context, two algorithms will be presented : a first one allowing to build a bound higher than this probability at a fixed number of simulator evaluations; a second one allowing to reduce as much as possible this bound by adding in an optimized way new simulator evaluations. The efficiency of these algorithms will finally be illustrated through the analysis of several test functions.

**Keywords:** risk analysis, surrogate modeling, Gaussian process regression, quantile estimation, error control

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