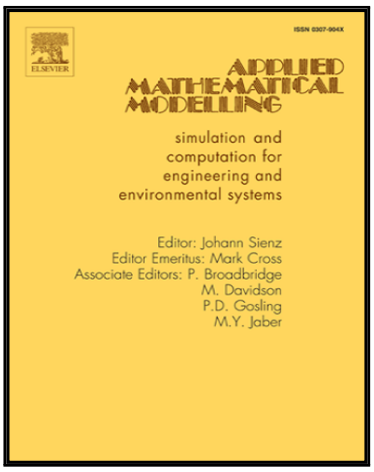

An Adaptive Metamodel-Based Subset Importance Sampling approach for the assessment of the functional failure probability of a thermal-hydraulic passive system

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PII: S0307-904X(17)30265-2
DOI: 10.1016/j.apm.2017.04.003
Reference: APM 11711

To appear in: *Applied Mathematical Modelling*

Received date: 9 June 2015
Revised date: 8 March 2017
Accepted date: 3 April 2017

Please cite this article as: Nicola Pedroni , Enrico Zio , An Adaptive Metamodel-Based Subset Importance Sampling approach for the assessment of the functional failure probability of a thermal-hydraulic passive system, *Applied Mathematical Modelling* (2017), doi: 10.1016/j.apm.2017.04.003

Highlights

- We assess the small failure probability of a nuclear passive system by Monte Carlo
- We use a fully nonparametric, quasi-optimal Importance Sampling Density (ISD)
- We use Subset Simulation and metamodels to iteratively approximate the optimal ISD
- We apply the method to the decay heat removal system of a Gas-cooled Fast Reactor
- We compare the proposed approach to several advanced methods of literature