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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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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

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