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Rennes, France. *Quality of Monte Carlo rare event analyzers.*

For complex systems, simulation is in general the only possible tool for their quantitative analysis, either for studying their performances or their dependability properties. Simulation is powerful, but it has its own drawbacks, and one of the main ones is the difficulties in analyzing rare events. When the event of interest is rare, standard simulation simply fails. This led to the development of whole families of specialized estimators, for different types of metrics, among which we can underline Importance Sampling and Splitting methods. This also led to the development of mathematical tools for capturing the right properties of an estimator in this context, in order to evaluate its quality in general (its efficiency, its robustness, etc.). This talk explores these issues, underlines the hard open points and proposes some research perspectives. (Received August 20, 2012)