The Design-Time Side-Channel Information Leakage Estimation

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Abstract

The design of today's circuits is an iterative process, where every iteration could influence the information leakage into the side channel. During the design time, bugfixes must be incorporated, and sometimes even architectural changes are performed.

The principles of a new analytical simulation-based method allowing an efficient side-channel information leakage evaluation in various steps of the digital design flow will be presented. If applied, the method allows to decide, if a certain design decision has a positive or negative influence on the side-channel information leakage independently of any current or future attack schemes.

The experiments with the benchmark circuits showed, that (when the manufacturing variations are supressed) the N-Modular-Redundancy offers no additional information leakage compared to the single module and the unbalanced dual-rail implementation offers additional information compared to the single-rail implementation.

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Reference

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