Exploiting Practical-considering Techniques in MOSFET Circuit Simulations based on Selective-tracing Waveform Relaxation Algorithm

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Abstract

Practical-considering techniques are special method to enhance the simulation speed. They utilize customs of engineers (or software using circuit simulations). Incremental simulation is one of practical-considering techniques. This paper proposes a new incremental simulation algorithm called Incremental-pseudo Circuit Method (IPC-method), which is constructed in Selective-tracing Waveform Relaxation (STWR) algorithm. The Interactive Simulation Environment (ISE) has been proposed to cooperate with the incremental simulation for efficiency considerations. Another practical-considering technique is called simulation-on-demand (SOD), which is also proposed in this paper. Real experiments on the implemented program justify the effectiveness of proposed methods.

Keywords: incremental circuit simulation, relaxation-based, WR algorithm

應用實際考量技巧於基於 STWR 演算法的 MOSFET 電路模擬

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摘要

此論文所謂實際考量技巧為考慮電路模擬器使用者的習慣，然後利用之以加強電路模擬效率的技巧，漸增模擬屬於實際考量技巧之一，此篇論文提出了稱做 IPC 的新的漸增模擬技術，而將之建構於 STWR 演算法中，也提出了 ISE 模擬環境搭配漸增模擬以發揮較高的模擬效率；另一種實際考量技巧為需求模擬(SOD)，也將之實際建構於 ISE 中。所有提出的方法均實際製做了，也執行了實際的電路模擬以測試之，模擬的結果驗證了所提方法的優秀效果。

關鍵詞：漸增線路模擬，基於鬆弛，WR 演算法