

# 利用基因演算法解決通道繞線上串音問題

林增文、程仲勝

E-mail: 9127906@mail.dyu.edu.tw

## 摘要

隨著VLSI製程技術的日益精進，在VLSI晶片中內部連接線之間的距離變的越來越緊密，這使得連線間的串音(CROSSTALK)問題越來越嚴重，進而影響VLSI晶片效能與其良產率(YIELD)。由於串音的增加將會造成電路訊號傳遞的延遲(SIGNAL DELAY)並且導致電路行為的不穩定，甚至造成良產率的降低。因此，減少連接線間的串音值在今日的VLSI設計中變的非常重要。在本論文中，我們提出一個在格子化(GRID-BASED)的通道繞線問題中能夠降低串音的方法稱之為GACR(GENETIC ALGORITHM CROSSTALK REDUCTION)演算法。我們的方法主要是以基因演算法(GENETIC ALGORITHM)為基礎所發展出來的，並且利用基因演算法中選擇(SELECTION)、交配(CROSSOVER)以及突變(MUTATION)等基本運算子的重複運算來達到串音最小化的結果。由實驗結果得知，我們所得到的結果與先前的研究作比較，我們的方法均優於或近似於先前的方法。

關鍵詞：串音，通道繞線，基因演算法

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