

# Low Power Scheduling For High-Level Synthesis

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**Abstract**—Low power design has become a critical factor in the technical and commercial success of modern hardware systems. High Level Synthesis (HLS) involves transforming a behavioral description into a structural RTL-level netlist through scheduling, allocation, and binding [1] [2]. The aim of this paper is to discuss integrated low power methods within the scheduling process of the HLS performed in [3]. The goal is to minimize switching activity and utilize low-power modules while meeting performance constraints, ultimately achieving a balance between size, performance, and energy efficiency. The scheduler discussed is known as the Power Scheduler [1] which identifies mutually exclusive operation paths, analyzes their activity profiles, and partitions them using a compatibility graph and clique search algorithm. Each resulting partition has a controlled activation or deactivation mechanism meaning they can be switched off when not used.

**Index Terms**—high level synthesis, scheduling, dynamic and static power, clique search algorithm.

## I. INTRODUCTION

This document is a model and instructions for L<sup>A</sup>T<sub>E</sub>X. Please observe the conference page limits.

## II. RELATED WORK

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### A. Power Scheduling

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, ac, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

### B. Conclusion

- Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as “3.5-inch disk drive”.
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- Use a zero before decimal points: “0.25”, not “.25”. Use “cm<sup>3</sup>”, not “cc”).

## ACKNOWLEDGMENT

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## REFERENCES

Please number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first . . .”

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

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For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [?].

#### REFERENCES

- [1] A. Rettberg, “Low Power Driven High-Level Synthesis for Dedicated Architectures,” Phd Thesis, University of Paderborn, Paderborn, North-Rhein Westphalia, December 2006.
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- [3] A. Rettberg and F. J. Rammig, “Integration of Energy Reduction into High-Level Synthesis by Partitioning,” in IFIP International Federation for Information Processing, 2006, pp. 225-234.