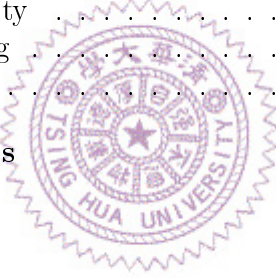


# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Related Work on MTCMOS and Our Motivation</b>	<b>6</b>
<b>3</b>	<b>Algorithm for Cell Clustering</b>	<b>13</b>
3.1	Cell Characterization . . . . .	13
3.2	Construct Relation Graph . . . . .	17
3.2.1	Compute Delays of all Gate-Outputs . . . . .	17
3.2.2	Determine Mutual Exclusive Cells by Topology and Functionality . . . . .	19
3.3	Clique Partitioning . . . . .	26
3.4	Merge of Cliques . . . . .	26
<b>4</b>	<b>Experimental Results</b>	<b>29</b>
<b>5</b>	<b>Conclusions</b>	<b>35</b>



# List of Figures

1.1	Leakage power/total power consumption on different manufacturing technology . . . . .	3
1.2	MTCMOS circuit structure . . . . .	4
2.1	Sleep transistor modeled as resistor . . . . .	7
2.2	Discharge scenario . . . . .	7
2.3	Logic gates labeled with all possible transition times . . . . .	12
3.1	Design flow of the cell clustering algorithm . . . . .	14
3.2	Global time slot bar . . . . .	18
3.3	AND gate discharge scenario . . . . .	20
3.4	OR gate discharge scenario . . . . .	20
3.5	Implication example . . . . .	25
3.6	Clique partitioning . . . . .	27
3.7	Merge of cliques . . . . .	28

# List of Tables

3.1	Implication rule of AND gate . . . . .	23
3.2	Implication rule of OR gate . . . . .	23
4.1	Characteristics of benchmark . . . . .	30
4.2	Results of design flow with and without functionality information	32
4.3	Ratio of gates with multiple fan-out . . . . .	34

