

Table of Contents

Invited Contributions

View from the Fringe of the Fringe (Extended Summary) 1
Steven D. Johnson

Hardware Synthesis Using SAFL and Application to Processor Design
(Invited Talk) 13
Alan Mycroft and Richard Sharp

FMCAD 2000

Applications of Hierarchical Verification in Model Checking 40
Robert Beers, Rajnish Ghughal, and Mark Aagaard

Model Checking 1

Pruning Techniques for the SAT-Based Bounded Model Checking Problem 58
Ofer Shtrichman

Heuristics for Hierarchical Partitioning with Application to Model Checking 71
M. Oliver Möller and Rajeev Alur

Short Papers 1

Efficient Reachability Analysis and Refinement Checking of Timed
Automata Using BDDs 86
Dirk Beyer

Deriving Real-Time Programs from Duration Calculus Specifications 92
François Siewe and Dang Van Hung

Reproducing Synchronization Bugs with Model Checking 98
Karen Yorav, Sagi Katz, and Ron Kiper

Formally-Based Design Evaluation 104
Kenneth J. Turner and Ji He

Clocking Issues

Multiclock Esterel 110
Gérard Berry and Ellen Sentovich

Register Transformations with Multiple Clock Domains 126
Alvin R. Albrecht and Alan J. Hu

Temporal Properties of Self-Timed Rings 140
Anthony Winstanley and Mark Greenstreet

Short Papers 2

Coverability Analysis Using Symbolic Model Checking 155
Gil Ratzaby, Shmuel Ur, and Yaron Wolfsthal

Specifying Hardware Timing with ET-LOTOS	161
<i>Ji He and Kenneth J. Turner</i>	
Formal Pipeline Design	167
<i>Tiberiu Seceleanu and Juha Plosila</i>	
Verification of Basic Block Schedules Using RTL Transformations	173
<i>Rajesh Radhakrishnan, Elena Teica, and Ranga Vemuri</i>	
Joint Session with TPHOLs	
Parameterized Verification of the FLASH Cache Coherence Protocol by Compositional Model Checking	179
<i>K.L. McMillan</i>	
Proof Engineering in the Large: Formal Verification of Pentium® 4 Floating-Point Divider	196
<i>Roope Kaivola and Katherine Kohatsu</i>	
Hardware Compilation	
Towards Provably-Correct Hardware Compilation Tools Based on Pass Separation Techniques	212
<i>Steve McKeever and Wayne Luk</i>	
A Higher-Level Language for Hardware Synthesis	228
<i>Richard Sharp and Alan Mycroft</i>	
Tools	
Hierarchical Verification Using an MDG-HOL Hybrid Tool	244
<i>Iskander Kort, Sofiene Tahar, and Paul Curzon</i>	
Exploiting Transition Locality in Automatic Verification	259
<i>Enrico Tronci, Giuseppe Della Penna, Benedetto Intrigila, and Marisa Venturini Zilli</i>	
Efficient Debugging in a Formal Verification Environment	275
<i>Fady Copt, Amitai Iron, Osnat Weissberg, Nathan Kropp, and Gila Kamhi</i>	
Model Checking 2	
Using Combinatorial Optimization Methods for Quantification Scheduling	293
<i>P. Chauhan, E. Clarke, S. Jha, J. Kukula, H. Veith, and D. Wang</i>	
Net Reductions for LTL Model-Checking	310
<i>Javier Esparza and Claus Schröter</i>	
Component Verification	
Formal Verification of the VAMP Floating Point Unit	325
<i>Christoph Berg and Christian Jacobi</i>	
A Specification Methodology by a Collection of Compact Properties as Applied to the Intel® Itanium™ Processor Bus Protocol	340
<i>Kanna Shimizu, David L. Dill, and Ching-Tsun Chou</i>	

The Design and Verification of a Sorter Core	355
<i>Koen Claessen, Mary Sheeran, and Satnam Singh</i>	
Case Studies	
Refinement-Based Formal Verification of Asynchronous Wrappers for Independently Clocked Domains in Systems on Chip	370
<i>Xiaohua Kong, Radu Negulescu, and Larry Weidong Ying</i>	
Using Abstract Specifications to Verify PowerPC™ Custom Memories by Symbolic Trajectory Evaluation	386
<i>Jayanta Bhadra, Andrew Martin, Jacob Abraham, and Magdy Abadir</i>	
Algorithm Verification	
Formal Verification of Conflict Detection Algorithms	403
<i>Ricky Butler, Víctor Carreño, Gilles Dowek, and César Muñoz</i>	
Induction-Oriented Formal Verification in Symmetric Interconnection Networks	418
<i>Eric Gascard and Laurence Pierre</i>	
A Framework for Microprocessor Correctness Statements	433
<i>Mark D. Aagaard, Byron Cook, Nancy A. Day, and Robert B. Jones</i>	
Duration Calculus	
From Operational Semantics to Denotational Semantics for Verilog	449
<i>Zhu Huibiao, Jonathan P. Bowen, and He Jifeng</i>	
Efficient Verification of a Class of Linear Hybrid Automata Using Linear Programming	465
<i>Li Xuandong, Pei Yu, Zhao Jianhua, Li Yong, Zheng Tao, and Zheng Guoliang</i>	
Author Index	481