Preface

This volume contains the proceedings of the First **International Workshop on Reduction Strategies in Rewriting and Programming, WRS 2001**. The workshop was held in conjunction with RTA 2001 in Utrecht (The Netherlands) on May 26, 2001, and has been (co-)organized by U Utrecht, TU Valencia and TU Wien.

Reduction strategies in rewriting and programming have attracted an increasing attention within the last years. New types of reduction strategies have been invented and investigated, and new results on rewriting / computation under particular strategies have been obtained. Research in this field ranges from primarily theoretical questions about reduction strategies to very practical application and implementation issues. The need for a deeper understanding of reduction strategies in rewriting and programming, both in theory and practice, is obvious, since they bridge the gap between unrestricted general rewriting (computation) and (more deterministic) rewriting with particular strategies (programming). Moreover, reduction strategies provide a natural way to go from operational principles (e.g., graph and term rewriting, narrowing, lambda-calculus) and semantics (e.g., normalization, computation of values, infinitary normalization, head-normalization) to implementations of programming languages.

WRS 2001 wants to provide a forum for the presentation and discussion of new ideas and results, recent developments, new research directions, as well as of surveys on existing knowledge in this area. Furthermore we aim at fostering interaction and exchange between researchers and students actively working on such topics.

Topics of interest include, but are not restricted to:

– theoretical foundations for the definition and semantic description of reduction strategies
– strategies in different frameworks (term rewriting, graph rewriting, infinitary rewriting, lambda calculi, higher order rewriting, conditional rewriting, rewriting with built-ins, narrowing, constraint solving, etc.) and their application in (equational, functional, functional-logic) programming (languages)
– properties of reduction strategies / computations under strategies (e.g., completeness, computability, decidability, complexity, optimality, (hyper-)normalization, cofinality, fairness, perpetuality, context-freeness, neededness, laziness, eagerness, strictness)
– interrelations, combinations and applications of reduction under different strategies (e.g., equivalence conditions for fundamental properties like termination and confluence, applications in modularity analysis, connections between strategies of different frameworks, etc.)

- program analysis and other semantics-based optimization techniques dealing with reduction strategies
- rewrite systems / tools / implementations with flexible / programmable strategies as essential concept / ingredient
- specification of reduction strategies in (real) languages, and
- data structures and implementation techniques for reduction strategies.

The technical program for the workshop includes six accepted papers, two invited talks by Sergio Antoy (Portland) and Eelco Visser (Utrecht), and a panel discussion with contributions by Michael Hanus (Kiel), Tetsuo Ida (Tsukuba), and Paul Klint (Amsterdam). We thank the invited speakers and panelists for accepting our invitation.

We wish to express our gratitude to all members of the program committee and to the external referees for their work and care in reviewing and selecting papers. Finally, we would like to extend our sincere thanks to all authors who submitted papers and to all workshop participants.

Bernhard Gramlich and Salvador Lucas
WRS 2001 Program Commitee Co-Chairs

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