Preface

There are many constraint satisfaction problems that have a great deal of symmetry. For example, when colouring a graph, many of the solutions are related by rotating the colours. Similarly, when solving a tournament timetabling problem, it does not matter in which order the participants play the first games: many of the solutions are related by permuting the participants. Symmetry in constraint satisfaction problems can be exploited to increase the efficiency of search. This can be done by avoiding exploring paths that have already been shown to be a dead-end in a symmetrical part of the search tree, or by adding constraints so that (ideally) only one assignment per equivalence class is enumerated. This process is often referred to as symmetry breaking or symmetry reduction.

This workshop focuses on the analysis and development of techniques to detect and exploit symmetry in constraint satisfaction problems. It is the second workshop in a series that started with SymCon’01 at CP’01 in Paphos, Cyprus (see http://www.csd.uu.se/~pierref/stra/SymCon01/).

These proceedings bring together a number of recent papers, extended abstracts, and work-in-progress reports on the topic of symmetry. It is hoped that this snapshot of current research will act as a catalyst for further research. These proceedings are also on-line, at http://www.csd.uu.se/~pierref/stra/SymCon02/.

Uppsala, 6 August 2002

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Barbara M. Smith
University of Huddersfield, UK
Toby Walsh
Cork Constraint Computation Centre, Ireland
Accepted Papers and Schedule

Papers (to be presented at the workshop)

9:00 – 9:40
Symmetry-Breaking Constraints for Matrix Models
Zeynep Kiziltan and Barbara M. Smith
Constraint Programming with Multisets
Zeynep Kiziltan and Toby Walsh

9:40 – 10:10
Supersymmetric Modelling for Local Search
Steven Prestwich

10:10 – 10:30
Symmetry Breaking via Dominance Detection for Lookahead Constraint Solvers
Igor Razgon and Amnon Meisels

10:30 – 11:00
Refreshments

11:00 – 11:30
Symmetry Breaking for Boolean Satisfiability:
The Mysteries of Logic Minimization
Fadi A. Aloul, Igor L. Markov, and Karem A. Sakallah

11:30 – 12:00
Breaking All the Symmetries in Matrix Models:
Results, Conjectures, and Directions
Pierre Flener and Justin Pearson

12:00 – 12:30
Group-Graphs Associated with Row and Column Symmetries of Matrix Models:
Some Observations
Zeynep Kiziltan and Michela Milano

12:30 – 14:00
Lunch

Statements of Interest (not to be presented at the workshop)
(full papers and presentations at the CP’02 main conference)

Breaking Row and Column Symmetries in Matrix Models
Pierre Flener, Alan M. Frisch, Brahim Hnich,
Zeynep Kiziltan, Ian Miguel, Justin Pearson, and Toby Walsh

Groups and Constraints: Symmetry Breaking During Search
Ian F. Gent, Warwick Harvey, and Tom Kelsey

Partial Symmetry Breaking
Iain McDonald and Barbara Smith

Symmetry Breaking Revisited
Jean-François Puget