

# Table of Contents

## Invited Talk

|                                                                                      |   |
|--------------------------------------------------------------------------------------|---|
| Executable Specifications for Language Implementation<br><i>U. Kastens</i> . . . . . | 1 |
|--------------------------------------------------------------------------------------|---|

## Session: Integration of Different Paradigms I

|                                                                                          |    |
|------------------------------------------------------------------------------------------|----|
| Avoiding Dynamic Delays in Functional Logic Programs<br><i>J. Boye</i> . . . . .         | 12 |
| A Debugging Model for Functional Logic Programs<br><i>M. Hanus, B. Josephs</i> . . . . . | 28 |

## Session: Constraint Programming

|                                                                                                                    |    |
|--------------------------------------------------------------------------------------------------------------------|----|
| A Conservative Approach to Meta-Programming in Constraint Logic Programming<br><i>P. Lim, J. Schimpf</i> . . . . . | 44 |
| The Versatility of Handling Disjunctions as Constraints<br><i>J. Jourdan, T. Sola</i> . . . . .                    | 60 |

## Session: Static Analysis and Abstract Interpretation I

|                                                                                                                                                                                            |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Efficient Bottom-up Abstract Interpretation of Prolog by means of Ceonstraint Solving over Symbolic Finite Domains<br><i>M.-M. Corsini, K. Musumbu, A. Rauzy, B. L. Charlier</i> . . . . . | 75 |
| Improvements in Compile-Time Analysis for Ground Prolog<br><i>A. Kågedal</i> . . . . .                                                                                                     | 92 |

## Session: Grammars

|                                                                                                                                                     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| A New Top-Down Parsing Algorithm for Left-Recursive DCGs<br><i>M.-J. Nederhof</i> . . . . .                                                         | 108 |
| Specification and Implementation of Grammar Couplings Using Attribute Grammars<br><i>M. Jourdan, C. L. Bellec, D. Parigot, G. Roussel</i> . . . . . | 123 |
| Programming Language Specification and Prototyping Using the MAX System<br><i>A. Poetzsch-Heffter</i> . . . . .                                     | 137 |

## Invited Talk

### Flang and Its Implementation

*A. Mantsivoda* . . . . . 151

## Session : Narrowing I

### Efficient Lazy Narrowing Using Demandedness Analysis

*J. J. Moreno-Navarro, H. Kuchen, J. Mariño-Carballo, S. Winkler,  
W. Hans* . . . . . 167

### A Demand Driven Computation Strategy for Lazy Narrowing

*R. Loogen, F. L. Fraguas, M. Rodríguez-Artalejo* . . . . . 184

## Session: Integration of Different Paradigms II

### Functional Programming Languages with Logical Variables: A Linear Logic View

*J. Darlington, Y. Guo, M. Köhler* . . . . . 201

### Objects with State in Contextual Logic Programming

*A. Natali, A. Omicini* . . . . . 220

## Session: Parallelism I

### A Novel Method for Parallel Implementation of *findall*

*K. A. M. Ali, R. Karlsson* . . . . . 235

### A Parallel Implementation for AKL

*R. Moolenaar, B. Demoen* . . . . . 246

## Session: Implementation Techniques

### Inlining to Reduce Stack Space

*O. Kaser* . . . . . 262

### A WAM-Based Implementation of a Logic Language with Sets

*A. Dovier, E. Pontelli* . . . . . 275

## Session: Parallelism II

### An OR Parallel Prolog Model for Distributed Memory Systems

*V. Benjumea, J. M. Troya* . . . . . 291

### Executing Bounded Quantifications on Shared Memory Multiprocessors

*J. Barklund, J. Bevenmyr* . . . . . 302

## Session: Static Analysis and Abstract Interpretation II

|                                                                                |     |
|--------------------------------------------------------------------------------|-----|
| A Lattice of Abstract Graphs                                                   |     |
| <i>D. Clark, C. Hankin</i> . . . . .                                           | 318 |
| Higher-Order Chaotic Iteration Sequences                                       |     |
| <i>M. Rosendahl</i> . . . . .                                                  | 332 |
| Proving the Correctness of Compiler Optimisations Based on Strictness Analysis |     |
| <i>G. Burn, D. L. Métyer</i> . . . . .                                         | 346 |

## Invited Talk

|                                            |     |
|--------------------------------------------|-----|
| Abstract Complexity of Prolog Based on WAM |     |
| <i>A. Y. Dikovsky</i> . . . . .            | 365 |

## Session: Narrowing II

|                                                                           |     |
|---------------------------------------------------------------------------|-----|
| Development of Rewriting Strategies                                       |     |
| <i>A. Letichevsky</i> . . . . .                                           | 378 |
| Narrowing Approximations as an Optimization for Equational Logic Programs |     |
| <i>M. Alpuente, M. Falaschi, M. J. Ramis, G. Vidal</i> . . . . .          | 391 |

## Abstracts of System Demonstrations and Posters

|                                                                       |     |
|-----------------------------------------------------------------------|-----|
| PAGODE: A Back End Generator                                          |     |
| <i>P. Canalda, L. Cognard, A. Despland, M. Mazaud</i> . . . . .       | 410 |
| SelfLog: Language and Implementation                                  |     |
| <i>M. Bugliesi, G. Nardiello</i> . . . . .                            | 412 |
| Embedding Declarative Subprograms into Imperative Constructs          |     |
| <i>M. Jourdan, F. Lagnier, F. Maraninchi, P. Raymond</i> . . . . .    | 414 |
| Stack Management of Runtime Structures in Distributed Implementations |     |
| <i>G. Hogen, R. Loogen</i> . . . . .                                  | 416 |
| Efficient Register Allocation for Large Basic Blocks                  |     |
| <i>C. W. Keßler, T. Rauber</i> . . . . .                              | 418 |
| Generation of Synchronization Code for Parallel Compilers             |     |
| <i>M. Alt, G. Sander, R. Wilhelm</i> . . . . .                        | 420 |