Preface

This volume contains the papers presented at the 1999 International Conference on Principles and Practice of Declarative Programming (PPDP’99) held in Paris from September 29 through October 1, 1999. PPDP’99 participated, together with the International Conference on Functional Programming (ICFP) and several related workshops, in a federation of colloquia known as Principles, Logics and Implementations of high-level programming languages (PLI’99). The overall event was organized by the Institut National de Recherche en Informatique et en Automatique (INRIA) and the ACM Special Interest Group for Programming Languages (ACM/SIGPLAN).

PPDP represents the union of two conferences that had been in existence for about a decade: Programming Languages, Implementations, Logics and Programs (PLILP) and Algebraic and Logic Programming (ALP). These conferences were held as one for the first time under the name PLILP/ALP in their tenth and seventh respective incarnations last year. The present rendition follows a decision by the combined steering committees to adopt a simpler name for the conference that also reflected the union. Continuing the tradition of PLILP/ALP, PPDP aims to stimulate research in the use of declarative methods in programming and on the design, application, and implementation of programming languages that support such methods. Topics of interest include the use of type theory, logics, and logical methods in understanding, defining, integrating, and extending programming paradigms such as those for functional, logic, object-oriented, constraint, and concurrent programming; support for modularity; the use of logics in the design of program development tools; development of implementation methods; and the application of the relevant paradigms and associated methods in industry and education. Many of these themes are reflected in the papers appearing in the present collection. Of particular note in these proceedings is the broad interpretation of declarative programming and the emphasis on both principles and practice in this area of research.

A few words about the selection of papers. Fifty-one full-length papers were received in response to the call for submissions. Each of these papers was reviewed by at least four individuals. The program committee met electronically in the last two weeks of April 1999 and, based on the reviews, selected 22 papers for presentation at the conference. A decision was also made during this meeting to include invited talks by Georges Gonthier (INRIA-Rocquencourt, France), Simon Peyton Jones (Microsoft Research, UK) and Pascal van Hentenryck (Catholic University of Louvain, Belgium), and tutorials by Chris Okasaki (Columbia University, USA) and Frank Pfenning (Carnegie Mellon University, USA) in the scientific program. These proceedings include all 22 contributed papers that were accepted, revised in accordance with the suggestions of the reviewers. Also included are papers that complement the presentations of Simon Peyton Jones and Pascal van Hentenryck and an abstract of the tutorial by Frank Pfenning. Papers accompanying the remaining invited talk and tutorial were not received by the time of going to press.
Many people and institutions are to be acknowledged for their contributions to PPDP’99. The organization of this conference and PLI’99 would not have been possible but for the efforts of François Fages and Didier Rémy, the chairs of PPDP’99 and ICFP’99, and Annick Theis-Viemont and the INRIA staff. The quality of the technical program owes much to the diligence of the program committee members and the several referees whose help they enlisted. In addition to providing careful reviews of submitted papers, many of these individuals participated in extended discussions at the PC meeting towards ensuring consistency and accuracy in the selection process. At a financial level, PPDP’99 benefitted from a grant from the European Commission program for Training and Mobility of Researchers; this grant was mediated by the European Association for Programming Languages and Systems (EAPLS). Additional financial support was provided by the Centre National de la Recherche Scientifique (CNRS), Compu- logNet, Microsoft Research, Ministère de l’Education Nationale, de la Recherche et de la Technologie (Gouv. France), Trusted Logic, and France Telecom. Finally, the meeting received an endorsement from the Association for Logic Programming.

July 1999

Gopalan Nadathur
Conference Organization

Conference Chair
François Fages, CNRS, ENS, Paris, France

Program Chair
Gopalan Nadathur, University of Chicago, USA

Program Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martín Abadi</td>
<td>System Research Center, Compaq, Palo Alto, USA</td>
</tr>
<tr>
<td>Maria Alpuente</td>
<td>Universidad Politécnica de Valencia, Spain</td>
</tr>
<tr>
<td>Mats Carlsson</td>
<td>SICS, Sweden</td>
</tr>
<tr>
<td>Iliano Cervesato</td>
<td>Stanford University, USA</td>
</tr>
<tr>
<td>Bart Demoen</td>
<td>Katholieke Universiteit Leuven, Belgium</td>
</tr>
<tr>
<td>Sandro Etalle</td>
<td>Universiteit Maastricht, The Netherlands</td>
</tr>
<tr>
<td>François Fages</td>
<td>CNRS, ENS, Paris, France</td>
</tr>
<tr>
<td>Manuel Hermenegildo</td>
<td>Universidad Politécnica de Madrid, Spain</td>
</tr>
<tr>
<td>Patricia Hill</td>
<td>University of Leeds, UK</td>
</tr>
<tr>
<td>Joxan Jaffar</td>
<td>National University of Singapore, Singapore</td>
</tr>
<tr>
<td>Bharat Jayaraman</td>
<td>SUNY Buffalo, USA</td>
</tr>
<tr>
<td>Xavier Leroy</td>
<td>INRIA, Rocquencourt, France</td>
</tr>
<tr>
<td>Pierre Lescanne</td>
<td>ENS Lyon, France</td>
</tr>
<tr>
<td>Eugenio Moggi</td>
<td>University of Genova, Italy</td>
</tr>
<tr>
<td>Gopalan Nadathur</td>
<td>University of Chicago, USA</td>
</tr>
<tr>
<td>Tobias Nipkow</td>
<td>Technische Universität München, Germany</td>
</tr>
<tr>
<td>Francesca Rossi</td>
<td>University of Padova, Italy</td>
</tr>
<tr>
<td>Harald Søndergaard</td>
<td>University of Melbourne, Australia</td>
</tr>
<tr>
<td>David S. Warren</td>
<td>SUNY Stony Brook, USA</td>
</tr>
<tr>
<td>Nobuko Yoshida</td>
<td>University of Sussex, UK</td>
</tr>
</tbody>
</table>
List of Referees

The following individuals and a few others who wished to remain anonymous have participated in the assessment of the manuscripts submitted to the conference:

Martín Abadi  
Elvira Albert  
María Alpuente  
Roberto Bagnara  
Richard Banach  
Françoise Bellegarde  
Zine-El-Abidine Benaissa  
Brandon Bennett  
Nick Benton  
Roberto Bruni  
Maurice Bruynooghe  
Francisco Bueno  
Daniel Cabeza  
Mats Carlsson  
Manuel Carro  
Iliano Cervesato  
Michael Codish  
Vítor Santos Costa  
Baoqiu Cui  
Rowan Davies  
Danny De Schreye  
Pierpaolo Degano  
Giorgio Delzanno  
Bart Demoen  
Marc Denecker  
Rachid Echahed  
Jesper Eskilson  
Sandro Etalle  
François Fages  
Moreno Falaschi  
Antonio J. Fernandez  
Maribel Fernández  
G. Ferrari  
Cormac Flanagan  
Matthew Flatt  
Cedric Fournet  
Fabio Gadducci  
María García de la Banda  
Simon Gay  
Vincente Gisbert  
Michael Hanus  
Andrew Heaton  
Nevin Heintze  

Martín Henz  
Manuel Hermenegildo  
Angel Herranz  
Carlos Herrero  
Patricia Hill  
Kohei Honda  
Zhenjiang Hu  
Joxan Jaffar  
Gerda Janssens  
Bharat Jayaraman  
Wolfram Kahl  
Antonios Kakas  
Andy King  
Shinji Kono  
Per Kreuger  
Frédéric Lang  
Xavier Leroy  
Pierre Lescanne  
Francesca Levi  
Mark D. Lillibridge  
Luigi Liquori  
Pedro López-García  
Salvador Lucas  
Luc Maranget  
Julio Mariño  
Kim Marriott  
Michel Mauny  
Guy McCusker  
Aart Middeldorp  
Dale Miller  
Eugenio Moggi  
Eric Monfroy  
Juan José Moreno-Navarro  
Gines Moreno-Valverde  
Gopalan Nadathur  
Wolfgang Naraschewski  
Tobias Nipkow  
Michael J. O’Donnell  
Hitoshi Ohsaki  
Mehmet Orgun  
Catuscia Palamidessi  
Benjamin C. Pierce  
Enrico Pontelli  
Frédéric Prost  
Germán Puebla  
María José Ramírez  
Rafael Ramírez  
Gianna Reggio  
Pedro Resende  
Christophe Ringeissen  
Francesca Rossi  
Salvatore Ruggieri  
Claudio Vittorio Russo  
Konstantinos Sagonas  
David Sands  
Ralf Schweimeier  
Bernhard Schätz  
Laura Semini  
Manuel Serrano  
Peter Sewell  
Konrad Slind  
Jan-Georg Smaus  
Sylvain Soliman  
Zoltan Somogyi  
Harald Sundgaard  
Fausto Spoto  
Leon Sterling  
Christopher A. Stone  
Peter Stuckey  
Péter Széredi  
Walid Taha  
Vincent Tam  
Hélène Touzet  
Henk Vandecastelee  
Wim Vanhoof  
Femke van Raamsdonk  
Sofie Verbaeten  
German Vidal  
David S. Warren  
Markus Wenzel  
Benjamin Werner  
Roland Yap  
Nobuko Yoshida  
Zhang Yuanlin  
Hans Zantema