## Springer-Verlag and the Environment

We at Springer-Verlag firmly believe that an international science publisher has a special obligation to the environment, and our corporate policies consistently reflect this conviction.

We also expect our business partners – paper mills, printers, packaging manufacturers, etc. – to commit themselves to using environmentally friendly materials and production processes.

The paper in this book is made from low- or no-chlorine pulp and is acid free, in conformance with international standards for paper permanency.

Printing: Weihert-Druck GmbH, Darmstadt Binding: Theo Gansert Buchbinderei GmbH, Weinheim

## General Remarks

Lecture Notes are printed by photo-offset from the master-copy delivered in cameraready form by the authors. For this purpose Springer-Verlag provides technical instructions for the preparation of manuscripts.

Careful preparation of manuscripts will help keep production time short and ensure a satisfactory appearance of the finished book. The actual production of a Lecture Notes volume normally takes approximately 8 weeks.

Authors receive 50 free copies of their book. No royalty is paid on Lecture Notes volumes.

Authors are entitled to purchase further copies of their book and other Springer mathematics books for their personal use, at a discount of 33,3 % directly from Springer-Verlag.

Commitment to publish is made by letter of intent rather than by signing a formal contract. Springer-Verlag secures the copyright for each volume.

## Addresses:

Professor, S. R. Buss Dept. of Mathematics University of California, San Diego La Jolla, CA 92093-0114, USA

Professor J.-Y. Girard Laboratoire de Mathématiques Discrètes Equipe Logique et Informatique 163, Avenue de Luminy – case 930 13288 Marseille – Cedex 9, France

Professor A. Lachlan
Dept. of Mathematics
Simon Fraser University
Burnaby, British Columbia V5A 1S6
Canada

Professor T. Slaman Dept. of Mathematics University of Chicago Chicago, IL 60637, USA

Professor A. Urquhart Dept. of Philosophy University of Toronto Ontario M5S 1A1, Canada

Professor H. Woodin Dept. of Mathematics University of California at Berkeley Berkeley, CA 94720, USA

Springer-Verlag, Mathematics Editorial Tiergartenstr. 17

## Lecture Notes in Logic

The scientific sponsor of this series is the Association for Symbolic Logic which, in conjunction with Springer-Verlag, appoints the editors. The series is intended to serve those conducting research and teaching in, as well as students of, symbolic logic, broadly interpreted. The type of material considered for publication includes:

- i) Research monographs
- ii) Lecture and seminar notes
- iii) Reports of meetings
- iv) Texts which are out of print.

The aim of the series editors and the publishers is to bring publications to the logic community with the least possible delay and to provide a conduit for the rapid dissemination of the latest research. Scientific quality is the overriding criterion by which submissions are evaluated.

Details of the editorial policy can be found on the inside of the front cover. Addresses of members of the editorial committee are listed inside the back cover.

ISB N 3-540-61434-6

