

## INSTRUCTIONS TO AUTHORS

**SUBMISSION OF MANUSCRIPTS:** Papers (three copies) may be submitted to any member of the Editorial Board. Authors should always keep a fully up-to-date version themselves. A copy of the paper and the name of the member of the Editorial Board to whom the paper has been submitted should also be sent to the Editor-in-Chief, who will record the submission. Submission of a paper is taken to imply that it has not been previously published and that it is not being considered for publication elsewhere. Upon acceptance of a paper, the author will be asked, under certain conditions, to transfer copyright to the publisher.

**ELECTRONIC MANUSCRIPTS:** The publisher would like to encourage the submission of manuscripts written in LaTeX, Plain TeX or AMS TeX (which can be used for direct typesetting). Authors using LaTeX may wish to use the MSCS Style file which can be obtained from the Editor-in-Chief or directly from the journals department, Cambridge University Press; otherwise they are requested to use 'article style'. Authors should send discs (Apple Mac or PC) plus relevant details **on acceptance of their paper** to the Editor-in-Chief. The *tex* (source code) files should be sent. These should correspond exactly to the *hardcopy accepted for publication*. Discs will not be returned. The publisher reserves the right to typeset any article by conventional means if the author's TeX code presents problems in production.

**LAYOUT OF MANUSCRIPTS:** Papers should be typewritten or equivalent in **double spacing throughout**, on one side of the paper. Please avoid footnotes. Papers should begin with an abstract of not more than 300 words.

**FIGURES:** Figures should be drawn in indian ink on good quality white paper or produced by computer to comparable quality. Wherever possible, they will be reproduced with the author's original lettering. Originals of figures should not be sent until the paper has been accepted. A list of captions should be attached separately.

**REFERENCES:** The Harvard system of references should be used. In the text, a reference should be quoted by the author's name and date in parentheses, in date order, e.g. (Smith 1983; Jones and Jones 1985; Hunter 1986a, b). Where there are three or more authors, the first name followed by *et al.* should be used. A full list of references should be given at the end of the text, listing, in alphabetical order, surname of author and initials; year of publication (in parentheses); title of paper; journal or book name (the former being abbreviated in accordance with the *World List of Scientific Periodicals*); volume number; first and last page of the reference. For books and conference proceedings, place of publication and publisher (and Editor(s) if appropriate) should be included.

**PROOF READING:** As far as possible, changes at proof stage should be restricted to typographical errors, and the publisher reserves the right to charge the author for additional corrections.

**OFFPRINTS:** Twenty-five offprints of each article will be supplied free to each first named author. Extra offprints may be purchased from the publisher if ordered at proof stage.

## THE JOURNAL

**Mathematical Structures in Computer Science (MSCS)** is a journal of theoretical computer science which focuses on the application of ideas from the structural side of mathematics and mathematical logic to computer science. The journal aims to bridge the gap between theoretical contributions and software design, publishing original papers or broad surveys with original perspectives in all areas of computing, provided that ideas or results from algebra, geometry or category theory form a basis for the work.

## EDITORIAL POLICY

The purpose of the journal is to increase the circulation of new very high standard results in this fast growing area. Notions, methods and results from algebras, geometry and category theory nowadays play a major role in theoretical and even applied computer science. This role is increasing and is stimulating new research directions in these mathematical disciplines as well as influencing various aspects of actual computing. Indeed, this journal is not meant to be only a 'theory journal' but, by choosing as a theme the use of mathematical methods of Computer Science independently of their area of application, it aims to highlight connections among different topics and to encourage applications of theoretical contributions.

This journal welcomes original papers, or broad surveys with original perspectives. Their standard should be at least comparable to the quality of the best journal in computer science or in mathematics. The papers may be in any area of computing, provided that they employ concepts or results from category theory, algebra or geometry. The journal also welcomes applications to computing based on the use of specific mathematical structures (e.g. topological and order-theoretic structures) as well as on proof-theoretic notions and results. The use of categorical or algebraic language just as a unifying tool for a variety of applications is also appreciated, in particular if linked with relevant experimental activity. In order to promote the use of categorical methods in computer science, expository and introductory papers are particularly welcome, with the specific aim of turning the (sometimes excessively) technical jargon of the community of category theorists to a commonly understood language for as many working computer scientists as possible. Equally, discussions of methodological or philosophical nature concerning the foundation of Computer Science are of interest for the journal.

Articles in pure category theory or in other areas of mathematics may be considered provided that there is a clear connection to computational issues or they investigate mathematical structures whose relevance to computer science is well established. However, these contributions should be directed to the broad audience of computer scientists to which this journal is addressed, since the applications of mathematical methods in the broadest sense in language design and software implementation is meant to be the main focus of this journal.



# MSCS

JUNE 1993 VOLUME 3 NUMBER 2

## CONTENTS

- |  |     |
|--|-----|
| Admissible and derivable rules in intuitionistic logic<br>PAUL ROZIÈRE                     | 129 |
| Universal domains and the amalgamation property<br>MANFRED DROSTE AND RÜDIGER GÖBEL        | 137 |
| Quantales, observational logic and process semantics<br>SAMSON ABRAMSKY AND STEVEN VICKERS | 161 |
| Least fixpoints of endofunctors of cartesian closed categories<br>J. LAMBEK                | 229 |
| Some monoidal closed categories of stable domains and event structures<br>GUO-QIANG ZHANG  | 259 |

© Cambridge University Press 1993

*Printed in Great Britain by the University Press, Cambridge*

---

**CAMBRIDGE**  
UNIVERSITY PRESS



0960-1295(199306)3:2;1-F