

# DOCUMENTA MATHEMATICA

JOURNAL DER DEUTSCHEN MATHEMATIKER-VEREINIGUNG

EXTRA VOLUME ICM 1998



## PROCEEDINGS

OF THE

## INTERNATIONAL CONGRESS

OF

## MATHEMATICIANS

### BERLIN 1998

AUGUST 18 – 27

VOL. I: INVITED LECTURES

DOCUMENTA MATHEMATICA, Journal der Deutschen Mathematiker-Vereinigung, publishes research manuscripts out of all mathematical fields and is refereed in the traditional manner.

DOCUMENTA MATHEMATICA is published on the World Wide Web under the address:

<http://www.mathematik.uni-bielefeld.de/documenta>

Manuscripts should be submitted as  $\text{\TeX}$  files by e-mail to one of the editors. Hints for manuscript preparation can be found under the above WWW-address.

MANAGING EDITORS:

Alfred K. Louis, Saarbrücken	<a href="mailto:louis@num.uni-sb.de">louis@num.uni-sb.de</a>
Ulf Rehmann (techn.), Bielefeld	<a href="mailto:rehmann@mathematik.uni-bielefeld.de">rehmann@mathematik.uni-bielefeld.de</a>
Peter Schneider, Münster	<a href="mailto:pschnei@math.uni-muenster.de">pschnei@math.uni-muenster.de</a>

EDITORS:

Don Blasius, Los Angeles	<a href="mailto:blasius@math.ucla.edu">blasius@math.ucla.edu</a>
Joachim Cuntz, Heidelberg	<a href="mailto:cuntz@math.uni-heidelberg.de">cuntz@math.uni-heidelberg.de</a>
Bernold Fiedler, Berlin (FU)	<a href="mailto:fiedler@math.fu-berlin.de">fiedler@math.fu-berlin.de</a>
Friedrich Götze, Bielefeld	<a href="mailto:goetze@mathematik.uni-bielefeld.de">goetze@mathematik.uni-bielefeld.de</a>
Wolfgang Hackbusch, Kiel	<a href="mailto:wh@informatik.uni-kiel.d400.de">wh@informatik.uni-kiel.d400.de</a>
Ursula Hamenstädt, Bonn	<a href="mailto:ursula@rhein.iam.uni-bonn.de">ursula@rhein.iam.uni-bonn.de</a>
Max Karoubi, Paris	<a href="mailto:karoubi@math.jussieu.fr">karoubi@math.jussieu.fr</a>
Rainer Kreß, Göttingen	<a href="mailto:kress@namu01.gwdg.de">kress@namu01.gwdg.de</a>
Stephen Lichtenbaum, Providence	<a href="mailto:Stephen.Lichtenbaum@brown.edu">Stephen.Lichtenbaum@brown.edu</a>
Alexander S. Merkurjev, Los Angeles	<a href="mailto:merkurev@math.ucla.edu">merkurev@math.ucla.edu</a>
Anil Nerode, Ithaca	<a href="mailto:anil@math.cornell.edu">anil@math.cornell.edu</a>
Thomas Peternell, Bayreuth	<a href="mailto:peternel@btm8x1.mat.uni-bayreuth.de">peternel@btm8x1.mat.uni-bayreuth.de</a>
Wolfgang Soergel, Freiburg	<a href="mailto:soergel@sun2.mathematik.uni-freiburg.de">soergel@sun2.mathematik.uni-freiburg.de</a>
Günter M. Ziegler, Berlin (TU)	<a href="mailto:ziegler@math.tu-berlin.de">ziegler@math.tu-berlin.de</a>

EDITORS OF THE EXTRA VOLUME ICM 1998:

Gerd Fischer, Düsseldorf	<a href="mailto:gerdfischer@cs.uni-duesseldorf.de">gerdfischer@cs.uni-duesseldorf.de</a>
Ulf Rehmann, Bielefeld	<a href="mailto:rehmann@mathematik.uni-bielefeld.de">rehmann@mathematik.uni-bielefeld.de</a>

This volume was produced electronically, using various dialects of  $\text{\TeX}$ , at the Fakultät für Mathematik, University of Bielefeld, Germany.

© 1998 for Layout: Ulf Rehmann, Technical Managing Editor, Fakultät für Mathematik, Universität Bielefeld, Postfach 100131, D-33501 Bielefeld, Germany.

ISSN 1431-0635 Print    ISSN 1431-0643 Internet

Print: Publishing On Demand by Geronimo GmbH, D-83026 Rosenheim, Germany  
<http://www.geronimo.de>