

Mathematical Programming Computation: A New MPS Journal

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The Mathematical Programming Society will publish the new journal *Mathematical Programming Computation (MPC)* beginning in 2009. The journal is devoted to computational issues in mathematical programming, including innovative software, comparative tests, modeling environments, libraries of data, and/or applications. A main feature of the journal is the inclusion of accompanying software and data with submitted manuscripts. The journal's review process includes the evaluation and testing of the accompanying software. Where possible, the review will aim for verification of reported computational results.

1 Background

In January 2007, Martin Grötschel proposed that MPS consider the creation of a computationally-oriented journal. The proposal was described in an email to Rolf Möhring. The following quote from the email provides a good summary of the intention of the proposal.

They see a weakness in our journal landscape concerning information about good codes, the distribution of codes themselves, of data and data collections and everything that has to do with computational aspects of this kind.

Rolf Möhring formed a committee to explore the idea of a new journal, with members Robert Bixby, William Cook (Chair), Thorsten Koch, Sven Leyffer, David Shmoys, and Stephen Wright. Email discussions were carried out between April 2007 and June 2007, and a short report was sent to Rolf Möhring to wrap up the committee's work. The consensus of the committee was to recommend that MPS possibly move forward with a web-based journal.

An MPC proposal was delivered to the MPS Council in September and approved on November 11, 2007. Following this, negotiations began with Springer Verlag concerning possible distribution of the journal.

On July 9, 2008, the MPS Council unanimously approved the following two motions.

1. Council approves the establishment of Mathematical Programming Computation (MPC) as a journal of the Society, following the guidelines proposed in the attached document "Mathematical Programming Computation: Notes on a New MPS Journal", with William Cook as the first editor-in-chief and Thorsten Koch as the first general editor. Council further approves the initial advisory board listed in this document.

2. Council approves the proposed contract with Springer-Verlag GmbH attached to this message, concerning the publication of Mathematical Programming Computation.

And MPC was off and running! The formation of the MPC Editorial Board was completed in August 2008 and the first manuscript was submitted to MPC on September 9, 2008.

The directors of the INFORMS Optimization Society and the SIAM Activity Group on Optimization have been contacted regarding MPC. Both organizations strongly support the plans for the journal. Discussions with the COIN-OR Technical Board have taken place over the past year, focusing on possible connections between MPC and the COIN-OR services.

2 Journal Distribution

MPC will be published together with Springer Verlag, with the first volume, consisting of four issues, appearing in 2009. The partnership with Springer creates an attractive combination of accessibility for both authors and academic institutions.

All MPS members will receive print versions of the journal as part of their membership benefits. The contents of the journal will be made freely available on the society-run MPC web site `mpc.zib.de`, housed at the Konrad-Zuse-Zentrum Berlin (ZIB). Supplementary material will be included on the web site, supporting the computational studies described in the journal articles.

3 Aims and Scope

MPC publishes original research articles concerning computational issues in mathematical programming. Topics covered in MPC include linear programming, convex optimization, nonlinear optimization, stochastic optimization, robust optimization, integer programming, combinatorial optimization, global optimization, network algorithms, and modeling languages.

MPC supports the creation and distribution of software and data that foster further computational research. The opinion of the reviewers concerning this aspect of the provided material is a considerable factor in the editorial decision process. Another factor is the extent to which the reviewers are able to verify the reported computational results. To these aims, authors are highly encouraged to provide the source code of their software. Submitted software is archived with the corresponding research articles. The software is not updated and the journal is not intended to be the point of distribution for the software. The author's licensing information is included with the archived software. In case the software is no longer available through other means, MPC will distribute it on individual request under the license given by the author. Our intent is to at least partly remedy today's situation where it is often impossible to compare new results with those computed by other codes several years ago.

Articles describing software where no source code is made available are acceptable, provided reviewers are given access to executable codes that can be used to eval-

uate reported computational results.

Articles may also provide data, their description, and analysis. Articles not providing any software or data will be considered, provided they advance the state-of-the-art regarding a computational topic.

4 Information for Authors

Manuscript

Only articles written in the English language will be considered for publication. There is no pre-set page limit on articles, but the journal encourages authors to be concise. The length of the manuscript will be taken into consideration in the review process. Authors should aim to present summaries of computational tests, rather than long tables of individual results. Detailed tables and log files can be included in supplementary material to be made available on the journal's web site.

Articles should give a general description of the software, its scope, and the algorithms used. Rather than long presentations of well-known algorithms, authors are encouraged to give details that deviate from the known state-of-the-art on specific design decisions and their consequences and implementation details.

Software

Computer codes must be accompanied by a clear description of the environment in which they are expected to be built, including instructions on how to obtain any required third-party packages. Clear and easy to follow instructions must be given on how to build and run the author's software, and how to use it to recompute any computational results given in the article.

Submission

Authors are invited to submit articles for possible publication in MPC. Articles can be submitted in Adobe PDF format through the journal's web-based system at `mpc.zib.de`. Software and supplementary material can also be submitted through this system. Software should be delivered as a zip or gzipped-tar archive file that unpacks into a directory, reflecting the name of the software.

Review

Articles within the scope of the journal will receive a rigorous review. The editorial board will strive to have papers reviewed within a four-month period. This target will be extended in cases of exceptionally long or difficult manuscripts.

The review of articles describing software will include an evaluation of the computer codes received with the submitted manuscript. The criteria used in the software review include the following points.

1. The innovation, breadth, and depth of the contribution.
2. An evaluation of the progress in performance and features compared with existing software.
3. The conditions under which the software is available.
4. The availability and quality of user documentation.
5. The accessibility of the computer code; the ease with which a developer can make modifications.

5 Editorial Board

The structure of the MPC Editorial Board is similar to that of the Mathematical Programming Series A board, with an additional team of Technical Editors to carry out software evaluations. It has been suggested that MPC adopt the flat model used in SIAM journals, with the aim of reducing average review times. Although we are not adopting this SIAM-like structure, this point can be revisited if a significant percentage of review times are above the four-month target.

Editor-in-Chief

The Editor-in-Chief has the overall responsibility for the journal. The duties include the formation of the Editorial Board, the establishment of guidelines and quality standards for the review process, oversight of the timeliness and fairness of reviews, the assignment of manuscripts to Area Editors, light copy editing of final manuscripts, and the general promotion of the journal. The initial Editor-in-Chief is William Cook (Georgia Tech).

General Editor

The General Editor is responsible for the quality of the software evaluation. The duties include consulting with the Editor-in-Chief on the selection of a board of Technical Editors, providing guidelines to the TE board, serving as a contact with the hardware/software support group, and assisting in setting up testing facilities. The initial General Editor is Thorsten Koch (ZIB).

Production Editor

The Production Editor is responsible for building and maintaining the MPS web distribution of the journal, including an on-line submission process. The initial Production Editor is Wolfgang Dalitz (ZIB).

Advisory Board

An Advisory Board provides general oversight of the journal. Membership on the board is subject to approval by the MPS Publications Committee and the MPS Council. The initial board consists of the following members.

- Robert Bixby (Rice University)
- Donald Goldfarb (Columbia University)
- Nick Gould (Rutherford Appleton Laboratory)
- Martin Grötschel (Konrad-Zuse-Zentrum Berlin)
- David Johnson (AT&T Research)
- Kurt Mehlhorn (Max-Planck-Institut Saarbrücken)
- Hans Mittelmann (Arizona State University)
- Arkadi Nemirovski (Georgia Tech)
- Jorge Nocedal (Northwestern University)
- Michael Trick (Carnegie Mellon University)
- Robert Vanderbei (Princeton University)
- David Williamson (Cornell University)

Area Editors

Area Editors have direct contact with authors, carry out initial reviews of papers, make assignments to Associate Editors and to Technical Editors, and make editorial decisions to accept or decline submissions. The initial board of Area Editors and their areas of interest are given in the following list.

- Daniel Bienstock (Columbia University):
Linear and Integer Programming

- Robert Fourer (Northwestern University):
Modeling Languages and Systems
- Andrew V. Goldberg (Microsoft Research):
Graph Algorithms and Data Structures
- Sven Leyffer (Argonne National Laboratory):
Nonlinear Optimization
- Jeffrey T. Linderoth (Univ. of Wisconsin-Madison):
Stochastic Optimization, Robust Optimization, and
Global Optimization
- Gerhard Reinelt (University of Heildelberg):
Combinatorial Optimization
- Kim-Chuan Toh (National University of Singapore):
Convex Optimization

Associate Editors

Papers are assigned to an Associate Editor by one of the Area Editors or by the Editor-in-Chief. The AE will seek to obtain reviews from at least two referees (one of whom could be the AE), or in the case of weaker papers a single negative report. The identity of the assigned AE is not revealed to the author of the paper. The members of the AE are board are as follows.

- Shabbir Ahmed, Georgia Tech
- Samuel Burer, University of Iowa
- Alberto Caprara, University of Bologna
- Sanjeeb Dash, IBM TJ Watson Research Center
- Camil Demetrescu, University of Rome
- Matteo Fischetti, University of Padova
- Emmanuel Fragniere, HEG, Geneva
- Michael P. Friedlander, Univ. of British Columbia
- Jacek Gondzio, University of Edinburgh
- Philip E. Gill, University of California San Diego
- Oktay Günlük, IBM TJ Watson Research Center
- Michal Kocvara, University of Birmingham
- Adam N. Letchford, Lancaster University
- Andrea Lodi, University of Bologna
- François Margot, Carnegie Mellon University
- Rafael Marti, University of Valencia
- Laurent Michel, University of Connecticut
- David Pisinger, University of Copenhagen
- Nikolaos V. Sahinidis, Carnegie Mellon University
- Peter Sanders, University of Karlsruhe
- Melvyn Sim, National University of Singapore
- Huseyin Topaloglu, Cornell University

- Michael Ulbrich, Technische Universität München
- Andreas Wächter, IBM TJ Watson Research Center
- Renato Werneck, Microsoft Research
- Yin Zhang, Rice University

Technical Editors

The review and testing of software is carried out by a board of Technical Editors, with guidance from the General Editor. The TE board has access to hardware/software platforms run by the journal to aid in the review process.

Software to review is assigned to a TE by one of the Area Editors or by the Editor-in-Chief. The review can be carried out by the TE, or a referee can be contacted. The identity of the assigned TE is not revealed to the author of the software. The TE may produce a public report describing the tests that were carried out; the report will be made available as supplementary material on the journal's web site. The initial TE board is made up of the following members.

- Tobias Achterberg, ILOG
- Erling D. Andersen, MOSEK ApS
- David Applegate, AT&T Research
- Oliver Bastert, Dash Optimization
- Pietro Belotti, Lehigh University
- Hande Y. Benson, Drexel University
- Andreas Bley, Konrad-Zuse-Zentrum Berlin
- Brian Borchers, New Mexico Tech
- Jordi Castro, Universitat Politècnica de Catalunya
- Daniel Espinoza, University of Chile
- Armin Fügenschuh, TU Darmstadt
- Andreas Grothey, University of Edinburgh
- Zonghao Gu, Atlanta
- William Hart, Sandia National Laboratories
- Keld Helsgaun, Roskilde University
- Benjamin Hiller, Konrad-Zuse-Zentrum Berlin
- Leonardo B. Lopes, University of Arizona
- Todd S. Munson, Argonne National Laboratory
- Dominique Orban, Ecole Polytechnique de Montréal
- Ted Ralphs, Lehigh University
- Mohit Tawarmalani, Purdue University
- Stefan Vigerske, Humboldt-Universität Berlin
- Richard A. Waltz, University of Southern California

6 Links for Further Information

- MPC Home Page mpc.zib.de
- MPS Journals
www.mathprog.org/mps_pubs.htm
- Springer's MPC Page
www.springer.com/math/journal/12532
- Notes on MPC
www.isye.gatech.edu/~wcook/mpc/
- MPC will use the Open Journal Systems (OJS) from Simon Fraser University pkp.sfu.ca/ojs