

MA&O 2004 CALL FOR PAPERS

10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference

Theme: MDO: Reshaping Design in Industry

30 August – 1 September 2004
Crowne Plaza Albany
Albany, New York

IMPORTANT DATES

Abstract submission begins:	03 November 2003
Abstract submittal deadline*:	16 January 2004
Abstract submittal deadline* extended to:	05 February 2004
Special session and panel proposals due:	16 January 2004
Special session proposal deadline extended to:	05 February 2004
Notification of acceptance:	26 March 2004
Full/final student competition papers due:	26 April 2004
Full/final papers due:	25 June 2004

*1500 word (or more) abstract required. See *Procedure for Submitting Extended Abstracts* below.
Abstracts Include: Paper abstracts, Work in Progress (WIP) abstracts, and abstracts for student paper competition.

ORGANIZING COMMITTEE

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General Contact and Information:

General Contact: mao-2004@rpi.edu

General Information: <http://www.rpi.edu/~messac/mao-2004>

CONFERENCE PURPOSE AND SCOPE

We are approaching the twenty year anniversary of the biennial Multidisciplinary Analysis and Optimization (MA&O) international conference, which brings together industry, government, and academe to present and discuss the latest in MA&O technology. Critical recent developments have placed MA&O in a central role in multidisciplinary design: (i) the ground breaking advances in nondeterministic approaches, (ii) the dramatically reduced cost and increased speed of computing, and (iii) the vibrant continued development of MA&O technology. These have also resulted in the broadening of MA&O application – to areas well beyond traditional structural aerospace systems.

This international conference will take a retrospective and prospective look at MA&O, and allow for a solid assessment of the state of the art. Contributions are invited covering a broad set of applications, from traditional aerospace and automotive to consumer products design. Methodological approaches of interest range from multidisciplinary and multiobjective to multiscale methods. Applications and MA&O approaches that address micro, nano, and biotechnology are also of particular interest. Topics of interest also include nondeterministic approaches, human-machine interaction, computational infrastructure, supporting software and hardware.

TOPICS OF INTEREST

Topics of interest include, but are not limited to:

- **Multidisciplinary Design Optimization (MDO) Methodologies**, including decomposition methods, MDO architectures and frameworks, and software integration and visualization.
- **Uncertainty Quantification and Non-Deterministic Design Optimization**, including sensitivity analysis, reliability-based design, and robust design.

- **Modeling and Simulation Methods**, including variable complexity modeling, model validation, reduced order modeling, crashworthiness, high performance computing, single and multi-point approximations, response surface methods, Kriging and spline approximations, neural networks and fuzzy logic.
- **Shape and Topology Optimization** for aerodynamic or general structural objectives, and with special emphasis on the discrete layout optimization problem.
- **Optimization Methods** for discrete or continuous problems, including multi-criteria optimization, gradient based optimization, evolutionary optimization, fuzzy optimization, and physical programming.
- **Design**, including approaches for technology assessment, evaluation, and selection; complex systems design; aeroelastic/structural design; aerospace vehicle design; materials design; and consumer products design.
- **Strategic Issues**, including system affordability, data handling and storage in distributed computing, and web-based computing and collaboration.
- **Emerging Methods**, including optimization in micro and nano technologies, multi-scale modeling and optimization, optimization in biotechnology, and other disciplines not yet commonly included in MA&O.
- **MA&O Applications** in aerospace systems, structural systems, topology and shape optimization, manufacturing, weapons design and optimization, consumer products design, automotive design, and MDO benchmark problems.

Papers involving single or multiple disciplines are welcome in all areas above. Additionally, survey papers that clearly denote historical development as well as the state of the art, and Work-in-progress (WIP) papers, are also solicited in the areas listed in this call for papers. Note that WIP papers will appear in the conference proceedings.

SPECIAL EVENTS

Specially Organized Sessions and Panels

Individuals who wish to organize special panel sessions or special technical paper sessions should submit a short proposal describing the nature of the session as it relates to the topics of interest specified. Importantly, the proposal should also include the names of organizers and participants. Specific instructions for submitting proposals can be found on the conference website <http://www.rpi.edu/~messac/mao-2004>. Note that any paper proposed as part of a special technical session must have an abstract submitted by the abstract deadline.

Student Paper Competition on Design Optimization

Undergraduate and graduate students who are working in fields listed under the topics of interest (be it multidisciplinary or not) are encouraged and invited to submit papers on design optimization. Co-authored papers (e.g., with advisors and other students) are welcomed. However, the first author must be a student and the conference presentation should be made by a student author. It is assumed that the student will have

played a key role in the research and writing of the paper. Student authors of the best undergraduate and graduate papers will be presented an award from the MDO Technical Committee at the conference. Papers and accompanying presentations will be judged on the originality of the work, the paper's potential importance to the field, and on its clarity. Detailed instructions for submitting a paper for the student paper competition can be found at the conference website <http://www.rpi.edu/~messac/mao-2004>.

PROCEDURE FOR SUBMITTING EXTENDED ABSTRACTS

Abstract submissions for the conference will be accepted electronically through AIAA's web site at <http://www.aiaa.org>. This web site will be open for submittals of abstracts starting **03 November 2003**. Authors will choose the MA&O conference from a menu of available AIAA meetings. Each author will then be prompted to provide his or her address, corresponding author information, citation information, AV requirements, and biographical information. Finally, authors will be prompted to upload their abstracts in two possible formats: MS Word or PDF. Full-length papers are encouraged, and extended abstracts (**1,500 words minimum**) in lieu of traditional (short) abstracts are **required**, and are due no later than **16 January 2004 (abstract deadline extended to: 05 February 2004)**. Note that all abstracts are due on 05 February 2004, be they paper abstracts, work-in-progress (WIP) abstracts, or abstracts for the student paper competition. To be considered for a full-length paper, each abstract must clearly describe the specific contributions and the current status of the work, and distinguish unambiguously between results at hand and those expected. Figures, data, and written findings must be included to support the status. A clear delineation of what work has been done and what work will be done is expected. Authors having difficulty submitting abstracts electronically should e-mail AIAA technical support at: paper_tech_support@aiaa.org.

Authors will be notified of paper acceptance by **26 March 2004**. An Author's Kit, containing detailed instructions and guidelines for submitting full/final papers to AIAA, will be made available on the web. Presentation at the conference will not be permitted unless authors provide a complete manuscript to AIAA by **25 June 2004** for inclusion in the at-conference proceedings. It is the responsibility of those authors whose papers are accepted to ensure that a representative attends the conference to present the paper. A "no-paper, no-podium" rule will be in effect for all presentations. AIAA will not consider for presentation or publication any paper that has been or will be presented or published elsewhere. Authors will be required to sign a statement to this effect.

WARNING – TECHNOLOGY TRANSFER CONSIDERATIONS

Prospective authors are reminded that technology transfer guidelines have substantially extended the time required for review/approval of abstracts and completed papers by U.S. government agencies. Internal (company) plus external (government) review can consume 16 weeks or more. All reviews/approvals are the responsibility of the author. Authors should determine the extent of approval necessary early in the paper preparation process to preclude paper withdrawals and late submissions.

ALBANY AT-A-GLANCE

The 2004 MA&O Conference will be held in the heart of New York State's Capital District. Aside from the conference hotel's ideal location and surrounding shops and restaurants, the Capital District offers a wealth of activities for all ages. From historic French and Indian War battle sites to fine arts, entertainment, and historic Saratoga Springs; the Capital District is sure to please the entire family!

The cultural life of upstate New York flourishes at historic Saratoga Springs. Experience world famous horse racing at the Saratoga Racetrack, or visit the Saratoga Performing Arts Center, which features the likes of The New York City Ballet, The Philadelphia Orchestra, Saratoga Chamber Music Festival, and the Lake George Opera.

Relive a part of North American history by visiting the restored Fort William Henry colonial fortress from the French and Indian War, or Fort Ticonderoga, a world-renowned museum, historic fort, and site of major victories in the Seven Years' War and American Revolution. Cruise beautiful Lake George or the scenic Hudson River on large cruise ships or classic steamboats. Experience the last week of horse racing at Saratoga Springs.