SIAM Activity Group Optimization

Charter Renewal Application

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Optimization. The SIAG/OPT was originally formed under the aegis of SIAM on October 27, 1985 by the SIAM Board of Trustees and electronically by the SIAM Council in January 2000. Its initial operating period began January 1, 1986 and ending December 31, 1988. Its charter has been renewed by the Council and Board twelve times thereafter.

This SIAG has 947 members, including 435 student members, as of December 31, 2024.

According to its Rules of Procedure, the objective(s) of the SIAG are to provide an environment for interaction between applied mathematicians, computer scientists, engineers, scientists, and others interested in optimization. The SIAG aims to foster the development of methods, software, and theory for optimization, and to foster the use of optimization techniques in scientific and industrial applications. Within the framework of SIAM, the SIAG will conduct activities that implement its purposes.

Its purposed functions were:

The SIAG on OPT will organize activities in Optimization. The SIAG is expected to:

1. Organize minisymposia at the SIAM Annual Meeting in years where there is no SIAG conference.
2. Organize a track of at least six minisymposia at the SIAM Annual Meeting at least once every five years. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG Chairs.
3. Organize a triennial SIAM Conference on Optimization. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual Meeting or other SIAG conferences. The co-Chairs of the Conference Organizing Committee shall be the Program Director and the Chair of the SIAG or their designees. The organizing committee must be approved by the VP for Programs at least 16 months before the conference.
4. With the approval of the SIAM Program Committee, the SIAG may organize special sessions at SIAM meetings, and conduct special one- or two-day meetings immediately before or after a regular SIAM meeting. Other SIAG meetings may be organized only with the approval of the SIAM President and Vice President for Programs.
5. Awarding of the triennial SIAM Activity Group on Optimization prize, established in 1992.
6. Awarding of the SIAM Activity Group on Optimization Early Career Prize, established in 2018.
7. Awarding of the SIAM Activity Group on Optimization Test of Time Award, established in 2023.
8. Maintain a SIAG wiki site http://wiki.siam.org/siag-op/index.php/Main_Page or produce a newsletter for SIAG members.
9. Publish the semi-annual newsletter SAIG/OPT News and Views.

The SIAG will organize these and other activities in order to (1) promote interaction between applied mathematicians, computer scientists, engineers, scientists, and others interested in optimization; (2) keep SIAM membership up to date on developments in optimization; and (3) facilitate development and application of optimization methods, software, and theory.

SIAG meetings, workshops, and conferences may be organized only with the approval of the SIAM President and the SIAM Vice President for Programs.

The SIAG has complemented SIAM's activities and supported its proposed functions. The answers to the questions below indicate how this was accomplished and what the officers propose as the future directions for the SIAG.

List all current officers of the activity group (including advisory board, if relevant).

Chair: Luis Nunes Vicente
Vice Chair: Coralia Cartis
Program Director: Gabriele Eichfelder
Secretary: Juliane Mueller

1. How is the field covered by the activity group doing? Is it growing, is the focus shifting? What have been the significant advances over the last three years?

Optimization is a vibrant area of applied and industrial mathematics. Due to its flexibility in formulating and solving problems, it has enabled breakthroughs in other areas of mathematics and contributed to significant improvements in industrial performance. Optimization has reinvented itself over time through the advent of new paradigms, including the interior-point method for linear programming, the development of first-order methods for big-data problems, and the evolution of stochastic methods for machine learning. After achieving the ability to solve very large-scale linear programming (LP) and integer LP problems, we are now on the verge of solving large mixed-integer nonlinear optimization problems. In the future, we will see more advancements in quantum computing optimization.

2. How is the activity group doing? Is it remaining vibrant? Is the size of the SIAG stable or increasing? How is the SIAG keeping up with the changes in the field? How are the broader interests of SIAM reflected in the activities of the SIAG?

The membership of the SIAM Activity Group on Optimization declined significantly after the pandemic but grew around the time of the SIAM Conference on Optimization. We expect it to increase substantially in 2026 when we host our next conference, particularly by attracting new members from outside the United States.

The members of our activity group connect naturally to other SIAGs, including Computational Science and Engineering, Data Science, Applied and Computational Discrete Algorithms, Imaging Science, and Mathematics of Planet Earth.

3. Please list conferences/workshops the activity group has sponsored or co-sponsored over the past three years, and give a brief (one sentence or phrase) indication of the success or problems with each.

The SIAM Activity Group on Optimization co-sponsored the 2023, 2024, and 2025 editions of the international conference *Modeling and Optimization: Theory and Applications* (MOPTA), hosted annually

by Lehigh University. MOPTA is a small-to-medium-sized conference that brings together approximately 140 participants each year on the Lehigh campus. As it is not organized under the auspices of any other professional society, it presents a strong opportunity for our sponsorship.

In 2023, the Gene Golub SIAM Summer School focused on optimization, with a particular emphasis on quantum computing optimization.

4. Please indicate the number of minisymposia directly organized by the activity group at the last two SIAM annual meetings. When did the SIAG last organize a track at an annual meeting or meet jointly with the SIAM Annual Meeting?

Because of the number of Activity Groups, the current guidelines are that an Activity Group should organize a track about every seven (7) Annual Meetings or meet jointly with the Annual Meeting within a seven (7) meeting period.

The 2023 SIAM Conference on Optimization was co-located with the SIAM Conference on Applied and Computational Discrete Algorithms (ACDA23). Moreover, the SIAG on Optimization organized a track at the 2021 SIAM Annual Meeting. Therefore, we have met SIAM's requirements, and our next required track participation will be in 2028.

5. Please indicate other activities sponsored by the activity group, to include newsletters, prizes and web sites. Have each of these been active and successful?

The website is up to date, the newsletter is current, and all of the 2026 prize selection committees have been formed.

One of the board's achievements was launching and successfully managing a $25K fundraising campaign for the SIAM Activity Group on Optimization Test of Time Award. By reaching this goal, we have ensured that the award will exist in perpetuity, continuing to recognize individuals or groups for a single, outstanding piece of work that has had a significant and lasting impact on the field of optimization. We are grateful to everyone who contributed to this effort and helped us reach our goal. In particular, we thank the institutions CMU CAPD, CMU Tepper School, Columbia EIOR, Cornell ORIE, George Mason SE&OR, Georgia Tech ISyE, Illinois IESE, Lawrence Labs, Lehigh ISE, Northeastern MIE, Northwestern IEMS, Ohio State ISE, Optimization Firm, Polytechnique Montréal MAGI, Purdue IE, Rice CMOR, Rutgers ISE, Southern Methodist OREM, Texas A&M, UHouston IE, UIowa Tippie, UMichigan IOE, UWisconsin ISyE, USC ISE, and Virginia Tech ISE, and the individuals Sven Leyffer, Jorge Nocedal, Denis Ridzal, Katya Scheinberg, Robert B. Schnabel, and Luis Nunes Vicente.

6. What activities are planned and proposed for the next period of the charter? Please describe scheduled and suggested future activities in detail.

At our SIOPT 2023 business meeting, we decided to launch an international call to select the location of the 2026 SIAM Conference on Optimization. As a result of this process, the 2026 conference will take place at the University of Edinburgh from July 2–5, 2026. Our premier event will feature an exceptional lineup of invited plenary speakers who will share their insights on cutting-edge developments in optimization. We are also excited to offer two mini-tutorials designed to introduce both foundational and emerging themes to a broad audience. The conference will explore a rich spectrum of topics, from

theoretical foundations to applied research addressing today's most pressing challenges. The invited plenary talks will be given by Radu Ioan Bot (University of Vienna, Austria), Andrea Lodi (Cornell Tech University, USA), Ruth Misener (Imperial College London, UK), Laura Sanità (Bocconi University, Italy), Ruoyu Sun (Chinese University of Hong Kong, China), and Stefan M. Wild (Lawrence Berkeley National Laboratory, USA). There will be two minitutorials: *Performance and computer-added analyses of optimization methods*, François Glineur, UCLouvain, Belgium Adrien B. Taylor (INRIA, France); *Fair and interpretable resource allocation and machine learning*, Phebe Vayanos (USC, USA).

We have made a strong effort to promote diversity at all levels in planning the 2026 conference, including diversity in research areas, gender, and geography. In particular, 7 of the 12 members of the organizing committee are female optimizers. We also note that 2 of the 3 prize committee chairs are women in optimization.

At our SIOPT 2023 business meeting, we also discussed three potential future activities for our SIAG: (1) online mini-courses; (2) regional/sectional (in-person) events; and (3) online social hours. The idea of social hours did not generate much enthusiasm, and we decided not to pursue it. There was also limited interest in online courses, as we issued a call for proposals but did not receive any worth pursuing. Regarding regional/sectional events, we were unable to take further steps beyond sharing the SIAG membership list with all members and encouraging spontaneous organization of such meetings. Our conclusion is that members are satisfied with the current offerings of the SIAG—particularly the triennial conference (including the mini-tutorials), the three prizes, the newsletter, and the SIAM Journal on Optimization.

7. How can SIAM help the activity group achieve its goals?

In addition to supporting ongoing activities, we believe SIAM could play a more active role in promoting in-person regional and sectional meetings. We see this as a goal for the next board. The current board went the extra mile by securing support for the Test of Time Award, organizing the SIAM Conference on Optimization outside the United States, and renewing the charter.

8. How can the activity group help SIAM in its general role of promoting applied mathematics and computational science?

We promote applied mathematics and computational science through research that connects with various areas of mathematics and scientific disciplines, finds broad application in industry, and involves a strong numerical component, including high-performance computing and software development. Additionally, we support the community by being one of the largest SIAGs, organizing a highly attended triennial conference, and offering a third award—the Test of Time Award.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a three-year operating period beginning January 1, 2026.

Luis Nunes Vicente, Chair of the SIAG on Optimization
May 19, 2025