

## **SIAM Activity Group on 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 on January 1, 1986 and ended on December 31, 1988. Its charter has been renewed by the Council and Board 11 (eleven) times thereafter. This SIAG has 1,281 members, including 786 student members, as of May 15, 2022.

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.

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 SIAG/Optimization prize, established in 1992.
6. Awarding of the triennial SIAG/Optimization Early Career Prize, established in 2018.
7. Maintain a SIAG wiki (moving from [http://wiki.siam.org/siag-op/index.php/Main\\_Page](http://wiki.siam.org/siag-op/index.php/Main_Page) to GitHub).
8. Publish the newsletter SIAG/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.

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

Katya Scheinberg (chair)  
Sam Burer (vice-chair)  
Jeff Linderoth (program director)  
Stefan Wild (secretary)

2. 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 not only remains a central part of many applied disciplines such as healthcare, energy, engineering design, and others; it has also recently formed the core of newer disciplines such as machine learning, data science, and artificial intelligence. This has spurred significant recent growth in the field and several subfields. All optimization subfields remain active, including linear, nonlinear, non-smooth, and discrete optimization. Some subfields, such as stochastic optimization and derivative-free optimization have seen a significant increase in activity due to interactions with new applied domains. All these subfields and applications are a part of SIAG/OPT activities. Emerging application domains, such as quantum computing, are also included.
3. 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 SIAG/OPT is currently the third-largest SIAM activity group. The membership has grown steadily in prior periods and currently is at the same level as three years previously, which, considering COVID and the lack of in-person conferences and activities during that time, indicates a very healthy state of the SIAG. The number of registered participants at the triennial SIOPT conference, which was entirely online, was at least 573 participants. The conference was held at the same time as SIAM AN21 and three more SIAM conferences, reflecting the fact that the field of optimization is closely related to many other areas within SIAM such as computational science and engineering, control and systems theory, data mining, and analytics, imaging science, and uncertainty quantification.
4. 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 last three years have been challenging for SIAG/OPT, as for other scientific communities.
  - SIAG/OPT is the organizer of the triennial SIAM Conference on Optimization. The last conference was planned to take place in May 2020 in Hong Kong. Due to the spread of Covid-19 in East Asia during the winter of 2019/2020, the organizers and SIAG officers worked in collaboration with SIAM to find an alternative location in the US. While such a location was found, it became clear that the spread of Covid-19 had reached the US, and an in-person conference would need to be postponed. It was then decided that the SIAM Conference on Optimization will be co-located with the 2021 SIAM Annual meeting alongside several other

SIAM conferences. While these meetings were initially planned in a hybrid model, they eventually were held entirely online. However, the number of minisymposia and other sessions was comparable to previous in-person meetings. We are grateful to the OP20 organizing and local committees who put together such a compelling international program. The full list of previous conferences in this series may be found at <https://www.siam.org/membership/activity-groups/detail/optimization#activity-group-archives>.

- o Other conferences closely related to SIAM Conference on Optimization sponsored by SIAG/OPT members and officers are: International Symposium on Mathematical Programming, the flagship conference of the Mathematical Optimization Society (MOS), and ICCOPT, an MOS-sponsored conference focusing on continuous optimization. ISMP was to be held in Beijing in 2021, but due to strict restrictions on travel to China, has been transformed into an online event this Summer 2022. ICCOPT will be held entirely in person in July 2022 in Bethlehem, PA.
5. 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?
- o The most recent AN and OP Conferences (in 2021) were held simultaneously. Participants registered for both events were able to attend minisymposia in both.
6. Please indicate other activities sponsored by the activity group, to include newsletters, prizes, and web sites. Have each of these been active and successful?
- o The activity group publishes the SIAG/OPT News and Views newspaper ([http://wiki.siam.org/siag-op/index.php/View\\_and\\_News](http://wiki.siam.org/siag-op/index.php/View_and_News)) once or twice a year. During the past three years, there were four issues.
  - o The activity group awards the SIAM Activity Group on Optimization Best Paper Prize every three years. It is presented at the triennial SIAM OP meeting. In 2021 it was awarded to Hamza Fawzi, James Saunderson, and Pablo Parrilo.
  - o In 2021, a new prize for early career researchers, the SIAM Activity Group on Optimization Early Career Prize, was awarded for the first time, and the recipient was John Duchi.
  - o SIAG/OPT officers have put together a proposal for a Test-Of-Time Prize, aimed at mid-career researchers but is not limited to those. The Prize will be given for an impactful paper published during the period of 10-20 years before the year of the award. The proposal has been approved by the Major Awards Committee and is being reviewed by SIAM Board and Council. The SIAG is hopeful that this award will be made for the first time at a nearer-term OP conference.
  - o To facilitate SIAG business and make management of the SIAG's web presence more sustainable, the SIAG has set up a GitHub organization (<https://github.com/SIAGOptimization>) with several private and public repositories. The SIAG expects to complete the migration of the SIAG's wiki to GitHub in the coming months.
  - o The activity group maintains a mailing list. While the mailing-list archives were

previously open for the broader community, they have been recently transitioned, along with other SIAGs, to a member-only list maintained through SIAM's Engage platform.

- o All of these are active and successful.

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

- o The SIAG/OPT officers are actively working on the next installment of the SIAM Conference on Optimization to be held May 31 – June 3, 2023, at the Sheraton Grand Seattle, Seattle, Washington, U.S. The program committee has been formed. The Conference will be colocated with ACDA 23, after a discussion at the OP21 business meeting.
- o The SIAG/OPT officers are exploring ways to better engage with industry, with the view of increasing collaboration and membership among Ph.D. graduates who choose careers in the industry.
- o The SIAG/OPT officers plan to conclude the new prize proposal process for the Test-Of-Time Award mentioned above, making it a new prize for the SIAG. It will be the third prize of the SIAG.

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

- o SIAM provides excellent logistical support for the activity group and handles the non-programmatic elements of the optimization conferences. It also hosts the activity group website and SIAM Engage.
- o SIAG/OPT membership is growing, but SIAM can help improve diversity by offering opportunities for leadership, service, and mentoring to under-represented populations. SIAM can also help SIAG/OPT by better integrating with Broader Engagement programs popular with the SIAG.
- o SIAM can help SIAG/OPT to attract a larger number of members from industry. Many PhD students do not renew their membership once they join industry, even if they continue related research activities.
- o SIAM can help SIAG's new initiative with the Test of Time award by approving the award in time for OP23.

9. How can the activity group help SIAM in its general role of promoting optimization?

- o The SIAG promotes SIAM membership at the business meeting at the SIAM Optimization Conference and through its website. We encourage publication in SIOPT, which is one of the two leading journals in optimization. We will work on organizing minisymposia at the next SIAM annual meeting. In addition to the SIAG prize, SIAG/OPT members are active in the solicitation of nominations and the selection for the SIAM/Mathematical Optimization prizes, the George B. Dantzig Prize, and the Lagrange Prize in Continuous Optimization.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a three-year operating period beginning January 1, 2023.

Signed,

Katya Scheinberg, Chair of the SIAG on Optimization May 22, 2022.