

SIAM Activity Group Geometric Design Renewal Application

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Geometric Design. The SIAM Activity Group (SIAG/GD) to which this renewal applies was originally formed under the aegis of SIAM in 1989 by the SIAM Council and by the SIAM Board of Trustees with its initial operating period beginning July 1, 1989 and ending December 31, 1992. Its charter has been renewed by the Council and Board eleven times thereafter.

SIAG Statistics:

- This SIAG has 146 members, including 47 student members and 99 non-student members, as of December, 31, 2017
- Of non-student members there are 13 female and 78 male members
- There are 66 domestic and 33 foreign members of the non-student SIAG members

According to its rules of procedure, the objective of the SIAG is to provide an environment for interaction between researchers and practitioners in the subjects of computer aided geometric design, curve and surface design, solid modeling and manufacturing, volumetric representations, computer graphics, supercomputing and graphics, and related topics.

Its purposed functions:

1. The SIAG will organize activities, including conferences and publications, to promote the interaction of practitioners and researchers and to keep the SIAM membership up to date on trends in geometric design.
2. The SIAG may (with the approval of the SIAM Major Awards Committee) make awards to researchers and practitioners in the field it serves.

Other activities may include:

3. Organize minisymposia at the SIAM Annual Meeting in years where there is no SIAG conference.
4. At least once every five years either organize a track of at least six minisymposia at the SIAM Annual Meeting or have an activity group meeting held jointly with the annual meeting. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG chair.
5. Organize a biennial SIAM Conference on Geometric Design. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual meeting or other SIAG conferences. The chair of the conference organizing committee shall be either the program director or the chairperson of the SIAG or their designee. The organizing committee must be approved by the VP for Programs at least 16 months before the conference.

6. 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.

7. Maintain a website for the activity group: <http://siags.siam.org/siaggd/>

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.

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

Chair: Kai Hormann

Vice Chair: Heidi E.I. Dahl

Program Director: Carolina Vittoria Beccari

Secretary: Bonita Saunders

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 two years?

The core topics of the field (design, modeling, simulation, and manufacturing) are thoroughly researched and well-established in the CAD/CAM industry worldwide by now, but there are still many interesting open research problems with the potential to further impact and improve specialized solutions. Significant advances have been achieved over the last two years, especially in new areas, like isogeometric design and analysis and 3D printing, with many related presentations at the last SIAM-GD meeting in 2017, which were well frequented even by the general SIAM-AN audience. Moreover, the recent growth of the field into new and evolving directions, such as computational fabrication and biomedical modeling, is asking for a deeper understanding of and new insights into the theory, with many promising research opportunities and exciting applications for the future.

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 size of the SIAG has been more or less constant over the last decade, which – given the fact that the founders and pioneers of the field have started to retire – means that we have been successful in recruiting new members. This is also reflected by the steady increase in student members. The recent growth into new areas (see item #2 above) certainly helps to attract the next generation of members. The SIAG enjoys a comparatively high percentage of members working in industry, which is beneficial for the interplay and the mutual and fruitful exchange of ideas between academia and industry.

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 SIAG Geometric Design organizes the biennial conference on Geometric Design. This list of conferences may be found at: <http://www.siam.org/meetings/archives.php#GD>.

The SIAM Conference on Geometric & Physical Modeling (GD/SPM) in 2015 had 136 attendees. The SIAM Conference on Industrial and Applied Geometry (GD) in 2017 had 81 attendees.

Unfortunately, the collocation of the 2017 SIAM-GD conference with the annual meeting has led to a significant drop in attendance, mainly due to the unusual scheduling of the conference in summer instead of fall and the fact that most other conferences in the field are taking place in summer, too. We have paid attention to this and have taken efforts to increase the number again for the next meeting (see item #8 below).

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?

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 last SIAM-GD conference in 2017 was collocated with the SIAM Annual Meeting.

At the 2018 Annual Meeting, MS-105 on "Automated Finite Element Analysis" is organized by our SIAG.

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?

The SIAG's website has been down for a number of years now, and we are in the process of reactivating it, now hosted by SIAM. In particular, the SIAG secretary has started creating a wiki page, which may be found at: http://wiki.siam.org/siag-gd/index.php/Main_Page.

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

See item #6 above.

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

In order to increase attendance and to attract new members, we decided to co-locate the next SIAM-GD conference in 2019 with three other conferences – Geometric Modeling and Processing (GMP 2019), Solid and Physical Modeling (SPM 2019), Shape Modeling International (SMI 2019) – under the label “International Geometry Summit” (IGS), as a follow-up of the successful event, which was held in Berlin under the same label in 2016 (see <http://www.geometrysummit.org/>). Moreover, we changed the name of the conference to “SIAM Conference on Computational Geometric Design” to reflect the increased importance of computational aspects in the field.

We further would like to establish a SIAG/GD Early Career Prize for outstanding junior researchers and the SIAG/GD John A. Gregory Award, a Career Prize for outstanding senior researchers with exceptional lifetime achievements, in the near future.

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

Keep promoting SIAM-GD conferences as in the past.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two year operating period beginning January 1, 2019.

Signed by

A handwritten signature in black ink, appearing to read "Kai Hormann", with a long, sweeping underline.

Kai Hormann
SIAG/GD Chair
May 28, 2018