

## **SIAM Activity Group Geometric Design Pro Forma Charter Renewal Application**

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on **Geometric Design**. The SIAM Activity Group (or SIAG) 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 10 times thereafter.

This SIAG has 147 members, including 38 student members, as of December, 31, 2015.

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: Tom Peters

Vice Chair: Stephen Mann

Program Director: Daniel Gonsor

Secretary: Gudrun Albrecht

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 field remains intellectually viable, even as it has matured. Much of the research in the '80's was focused upon contemporary issues in CAD/CAM. The success of CAD/CAM in becoming internationally pervasive in design and manufacturing has enshrined the importance of geometric modeling. With this breadth has come specialization in differing product disciplines. More incremental engineering refinements have occurred. While these successes owe much to early foundations, new methods for design, modeling, simulation and manufacturing now argue for extending the theory. The GD SIAG has been inclusive of biomedical, molecular and life science modeling, as well as additive manufacturing. The continued growth of those fields will rely upon the insights of this community to innovate new geometrical representations. The perspective of this community is crucial, so that time is not wasted in misdirected efforts that either re-invent past discovery or flail into areas already shown to be non-productive.

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?

This SIAG is experiencing some difficulty in the transition from its initial identity to more contemporary issues. Many of the pioneers are no longer present, due to having retired or passed away. This transition has been occurring for several years.

The size has been relatively constant over the last decade, but that has been a decline from its early peak. The attendance at the 2015 meeting was less than previous meetings. We considered options and decided that having the 2017 GD in conjunction with the 2017 Annual Meeting would be a useful experiment towards greater attendance.

The group is well poised to welcome new young members to be the next generation of modelers as discussed in #2. Efforts are being undertaken this year to bring those students to the 2017 meeting. We've paid attention to the rapid rise of the similar SIAG on Applied Algebraic Geometry. There appear to be shared intellectual interests and we are exploring ways to work productively together for mutual benefit. This promises to be an exciting initiative for both SIAGs.

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/meeting/archive.php#GD>.

The SIAM Conference on Geometric Design in 2009 had 144 attendees

The SIAM Conference on Geometric Design in 2011 had 164 attendees

The SIAM Conference on Geometric Design in 2013 had 149 attendees

The SIAM Conference on Geometric Design in 2015 had 118 attendees

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.\**

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?

7.

At the 2015 GD meeting, we encouraged all attendees to register two students as SIAM members. Funding from NSF was sought for travel awards for 20 students to the proposed 2017 GD meeting. While the overall proposal was recently declined, the aspect of student funding was lauded in the reviews. Another proposal is being written now to NSF to request similar student funding and informal conversations have occurred with DARPA, which may also lead to a more formal request.

Previously, no prizes were awarded, but that was discouraged by charter. This current proposed charter will revise to include the opportunity for awards. This revision was prompted by SIAG members' interest in using this SIAG for the Gregory Award, which has been raised to the SIAM Council for consideration.

There is a SIAG web site, but it needs some updating, which is underway.

This community was saddened by the death of one of its founders, Gerald Farin. With coordination from this SIAG, an obituary was written by Bob Barnhill for SIAM News and special session(s) are being planned in Gerald's honor for our 2017 meeting.

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

2017 GD meeting in conjunction with SIAM annual meeting, Pittsburgh, July 10-12, 2017.

More proposals for student funding, with DARPA and NSF under consideration.

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

Promote the GD 2017 meeting within the SIAM Annual Meeting.

10. How can the activity group help SIAM in its general role of promoting geometric design?

Have an effective 2017 meeting. This SIAG retains close ties to industry, from its very roots. The industrial emphasis within SIAM can profit from further vigor and shared interest in student recruitment, both as SIAM members and as future industrial employees, should be mutually beneficial.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two year operating period beginning January 1, 2017.

Signed by

A handwritten signature in cursive script that reads "Thomas J. Peters".

Geometric Design SIAG Chair, May 31, 2016.