

**CHARTER RENEWAL
SIAG/DM (Discrete Mathematics)**

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Discrete Mathematics. The SIAG/DM was originally formed under the aegis of SIAM on July 19, 1984 by the SIAM Council and July 20, 1984 by the SIAM Board of Trustees. Its initial operating period began January 1, 1985 and ended December 31, 1987. Its charter has been renewed by the council and board eleven times thereafter. This SIAG had 532 members as of December 31, 2014; of these, 174 were students.

According to its Rules of Procedure, the objective(s) of the SIAG are to foster research in discrete mathematics and the development of its applications, and to bring together and stimulate interaction between the various and diverse communities of mathematical scientists such as those who specialize in combinatorics, computer science, communications, and operations research.

Within the framework of SIAM, the SIAG will conduct activities that implement its purposes.

Its purposed functions are to:

- 1) Organize minisymposia at the SIAM Annual Meeting on 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.

Other activities can include:

- 3) Organize a biennial SIAM Conference on discrete mathematics. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual meeting or other SIAG conferences.

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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. 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/three] years?

There is vibrant growth and activity in our field. New application areas are arising (including the increasing importance of graphs and networks to social and biological computing), and there are new and exciting connections to areas of pure mathematics whose relevance to our area are just being recognized (including graph limits and flag algebras). Growth is demonstrated by the increase in the number of journals covering the area and the large and growing number of conferences. Significant recent advances include Keevash's resolution of a long-standing conjecture on the existence of designs, which was a featured "hot-topic" lecture at DM14.

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 size of the SIAG seems relatively stable. To attract more members from academia, we hope to do a better job of explaining the benefits of the SIAG and membership in SIAM. We have recently added a moderated email list for conference announcements and other events of interest to SIAG members. The broader interests of SIAM continue to be supported by our co-organizing the joint ACM-SIAM Symposium on Discrete Algorithms (SODA), where we have had representation on the conference steering committee since 2000. With our flagship DM conference for 2016 we are trying a new policy, appointing joint co-chairs rather than a single chair of the program committee; one represents the pure mathematics side and the other the applied mathematics side of our field.

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

DM14 was well-attended (almost record attendance) and successful, though members expressed concern about the large number of parallel sessions (the meeting is too short) and the lack of food at the coffee breaks (especially the younger members who are concerned about expenses and whom we need to cultivate). Question was raised by SIAM about whether there was sufficient representation of applied areas; we hope that adding an applied co-chair for SIAM DM16 will remedy this. We continue to co-sponsor SODA each January, participating on the steering committee. SODA is selective and, despite encouragement, does not have much participation from our members. We made efforts to organize a track at ICIAM in 2015. We have held several of our DM meetings at universities (Georgia State, Dalhousie, Vermont, Victoria) in an effort to reduce costs and increase student participation.

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 of minisymposia at an annual meeting?

The SIAG organized a track of six minisymposia at the 2009 annual meeting. SIAM requested a track (or co-location) at the annual meeting in Chicago in 2014. The previous activity group officers concluded that the Chicago loop is too expensive for our members, who are more heavily in academia than some other SIAGs, have less access to travel resources, and complain regularly about the high cost of SIAM meetings. In addition, the SIAG wishes to organize tracks at annual meetings in odd-numbered years, since the large majority of members would attend only the DM meeting. For ICIAM 2015, our program director co-organized a minisymposium. It will have smaller scale than originally hoped, because again the meeting is extremely expensive and the Chinese Academy of Sciences unexpectedly withdrew the financial support it had promised.

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?

SIAG/DM awards biennially the distinctive Dénes König Prize to a young mathematician; the special lectures by the winners at SIAM DM meetings have been well attended. We have considered the possibility of adding a student paper competition to the DM meeting, partly to attract more student members. We have terminated our previous emailed newsletter, lacking an individual to put in the needed effort. Instead, we are now using the SIAM mailing list server for approved postings. We also have not found an individual to manage the DM web presence on the SIAM site. The present activity group chair maintains a web site with links to conferences in the field; this is not formally under the auspices of SIAM but is useful for members of the activity group.

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

We have considered introducing a student paper competition associated with the SIAM DM meeting. With sufficient advance planning and enthusiasm from the next co-chairs, this could be introduced at DM18. We like the idea of having a "hot-topic" lecture in place of the "forward-looking session" to capture a recent development that may not have happened by the time SIAM requires a slate of invited speakers. We have considered starting a system of "area stewards" to help conference co-chairs keep up with developments in the field and ensure that new developments are featured at the conference. We have considered a proposal to hold a future SIAM DM meeting in Paris; the more senior members with more disposable income are more enthusiastic about this than the younger members. The meeting might be more strongly supported if it is not our regular flagship meeting. Meanwhile, we had two proposals to host

DM16; both were viable, with Georgia State chosen partly for geographical balance. The second proposal, from U Colorado Denver, may be renewed for DM18.

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

SIAM provides much-appreciated infrastructure for the smooth functioning of our conference. Membership and participation by the next generation would be encouraged by lower membership and registration fees for them. We will continue to work with SIAM to find ways to encourage students and others to join SIAM and our SIAG. For continuity and follow-up of ideas, the current charter renewal application document should be communicated to the incoming officers.

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

We have tried to address connections with applied math and computational science in the organizational structure of DM16. As we search for our next slate of officers for the SIAG, we will make sure that at least some candidates have connections to other SIAM areas and/or a more applied focus. We continue to represent SIAM as co-sponsor of the SODA conference, which maintains the presence of SIAM in the theory of algorithms and computation.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2016.

Signed,
Douglas B. West

SIAG DM Chair
May 19, 2015
