Pro Forma CHARTER RENEWAL APPLICATION
SIAM Activity Group on Discrete Mathematics

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Discrete Mathematics. The SIAM Activity Group (or SIAG) to which this renewal applies was originally formed under the aegis of SIAM on July 16, 1984, by the SIAM Council and July 17, 1984, by the SIAM Board of Trustees with its initial operating period beginning January 1, 1985, and ending December 31, 1987. Its charter has been renewed by the council and board five (5) times thereafter. This SIAG has 450 members as of June 30, 2001.

According to its Rules of Procedure, the objectives 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.

Its purposed functions were to organize activities that support its objectives in areas such as combinatorics, discrete optimization, graph theory, cryptography, mathematical programming, coding theory, information theory, game theory, and theoretical computer science including algorithms, complexity, circuit design robotics, and parallel processing.

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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 three years?

The growth in the field covered by the activity group is astonishing. Between January 2000 and September 2001 Math. Reviews reviewed 7298 items in Combinatorics (05), 1094 items in Discrete Geometry (52 B&C), 939 items in Computer Science (68E&R), 5016 items in Operations Research (90), and 2817 items in Information and Communications (94). All of these are areas of interest for members of the activity group. There is some double counting going on here but not much. For instance there were 383 items that had classification in both 05 and 90. These numbers show sustained and substantial growth over the entire time that the activity group has been in existence.

There is not now, nor has there ever been just one focus to the activity group. Rather there are many. Certainly the Clay Mathematical Institute's choosing "Is P = NP?" as their first Millennium Prize Problem gives public recognition to computational complexity as one focus. Certainly the remarkable advances in probabilistic methods spanning all of the disciplines of the activity group make these methods a focus. Certainly the structure theorems and new spectral parameters in graph theory give two foci in the largest subfield within our activity group. Let's see, what is missing? There have been advances in quantum computing, cryptography, error correcting codes, and applications of oriented matroids I am reluctant to make this list because the errors of omission will surely swamp my choices.

2. How is the activity group doing? Is it remaining vibrant? Is it keeping up with the changes in the field? What is the role of mathematics, industry, and interdisciplinary activity?

The activity group has a substantial and active membership. It is only a small fraction of the potential membership and that is a concern. The invited lectures and minisymposia have evolved as the field has. There is ample interdisciplinary activity between mathematicians, computer scientists, and operations researchers. There have been substantial changes in non-academic employers of discrete mathematicians. It used to be the case that AT&T Bell Labs and Bellcore Labs had numerous discrete mathematicians. (Indeed the majority of the SIAG's chairs came from these two organizations.) That is no longer the case. There are excellent discrete mathematicians at Microsoft Research, but the numbers are not comparable to the numbers in the past. We need to make new connections with industry. How do we do that?

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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.

Every other year we sponsor a meeting on Discrete Mathematics. The eleventh such will be held in San Diego in August of 2002. The tenth was held in Minneapolis in June of 2000. The ninth was held in conjunction with the SIAM national meeting in Toronto in 1998. The attendance at the Toronto meeting was our biggest. In contrast the attendance at the Minneapolis meeting was our smallest. A number of suggestions have been made about the reasons for the low attendance at the last meeting. These include the location, the timing, and the large number of competing conferences that summer. Note that PIMS (the Pacific Institute in the Mathematical Sciences) as part of a millennial celebration held four two-week workshops in Vancouver that summer and the SIAM conference was immediately following the quadrennial graph theory conference in Kalamazoo. Originally planners thought that having these conferences in consecutive weeks would be a good idea – perhaps not. The quality of the conferences remains high.

Every year we co-sponsor (with SIGACT of the ACM) the SODA (Symposium on Discrete Algorithms) conferences. The thirteenth such will be held in San Francisco in January of 2002. The twelfth was held in January of 2001 in Washington, D.C. and the eleventh in San Francisco in January 2001. The proceedings of these conferences remain a substantial contribution to the algorithms literature.

I believe we should plan to hold our principal meetings during the same week. We should consider whether the location should be fixed as well. The Snowbird model seems a good one.

4. Please indicate the number of minisymposia directly organized by the activity group at the last two annual meetings.

0. There was nothing of specific interest to the Discrete Math. Activity Group at the 2001 national meeting. At the 2000 national meeting the Polya award lecture was given by Noga Alon. There were two minisymposia organized by others that were tangentially of interest to our members.

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?

We have an electronic newsletter, currently edited by Mark Kayll. It contains news and announcements of conferences, jobs, books, etc. For many years we have had a print newsletter as well. This tended to be more mathematically substantive. The current editor is Jason Brown. There are ongoing discussions about making this web based.

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

We plan on continuing to sponsor the biennial Discrete Math conferences. We would like to have a consistent plan for this conference so that we can build expectations in our attendees. We need to actively search out applications to set us apart from other Discrete Math conferences. We have discussed a mentoring program for new researchers, loosely based on the MAA's Project NEXT. Such a program could be useful new faculty just starting positions.

We plan on continuing to co-sponsor the SODA conferences. Several years ago the framework for this conference was altered to be more inviting to the mathematical community.

We will cooperate in the AGTIVE conference held at the University of Virginia in September of 2003. AGTIVE is an acronym for Applied Graph Transformations with Industrial releVancE.

We hope to have a web-based newsletter including a problem column.

We should participate more fully in the SIAM national meetings and perhaps in joint meetings with other activity groups.

Finally we should look at the possibility of altering the offices of the activity group. Right now there is a completely new set of officers every three years. There is not much institutional memory here. When prior chairs are consulted they are quite happy to offer their confidence, but not much information. We should consider having the office of vice chair really be the chair elect. I'm not sure whether we would find individuals willing to commit for six years, but planning would be much better.

Another thing we need to consider is how to react when one of the officers has life intrude. One of us had a serious family crisis that affected how able this individual was to contribute. It took quite a while before we knew what was happening and there was nothing obvious to do.

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

SIAM could help develop mentoring programs and web based newsletters. SIAM could find ways to make the national meetings more interesting to the SIAG. As a start there should be some representation from the SIAG on the appropriate committees.

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

Each year there are many new Ph.D.'s in mathematics, applied mathematics, operations research, and computer science whose main interests are in the area of discrete mathematics. These individuals are often narrowly educated with regards to applications. The activity group should provide these new Ph.D.s with their introduction to SIAM.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a three-year operating period beginning January 1, 2003.

Signed
Michael O. Albertson,
Chair, SIAM Discrete Math Activity Group
9/27/01
