

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group (SIAG) on Dynamical Systems (SIAG/DS). The SIAG/DS was formed under the aegis of SIAM by the SIAM Council on December 2, 1988, and by the SIAM Board of Trustees on December 3, 1988. Its initial operating period began January 1, 1989, and ended December 31, 1991. Its charter has been renewed by the Council and Board every two years thereafter.

In accordance with the Rules of Procedure, the SIAG/DS aims to bring together researchers interested in the theory and applications of dynamical systems. Interests can range from fundamental mathematics of dynamical systems to the development of software for use in the study of dynamics, to applications in disciplines such as physics, chemistry, engineering, and the life sciences. The activities of the SIAG are designed to foster interactions between the academic community and researchers in industry and government laboratories, and to stimulate cross-disciplinary activities among people with similar interests but often different backgrounds.

The SIAG/DS is currently responsible for the following activities:

- Organize a biennial Activity Group meeting (SIAM Conference on Applications of Dynamical Systems);
- Sponsor the Jürgen Moser Lecture at the biennial Activity Group meeting by an individual who has made distinguished contributions to nonlinear science;
- Award the J.D. Crawford Prize at the biennial Activity Group meeting to an individual for recent outstanding work on a topic in dynamical systems and nonlinear science;
- Award the "Red Sock" Prize at the biennial Activity Group meeting for the best poster presentation in dynamical systems by up to four students or postdocs at the meeting;
- Organize minisymposia at the SIAM Annual Meeting in years when there is no Activity Group meeting;
- 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; and
- Maintain and enhance the Dynamical Systems Web portal DSWeb for members of the Activity Group and the public at large.

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The SIAG complements SIAM's activities and supports its 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?

The health of the field is best gauged by the content of the SIAM Journal of Applied Dynamical Systems (SIADS) and the program of the biennial Activity Group meeting. Since 1992, the Activity Group meeting has been held at the Snowbird Ski and Summer Resort, Snowbird, Utah, so the Activity Group meeting is commonly referred to as the "Snowbird meeting."

- Both the Journal and the Snowbird meeting indicate a continued interest in the theory and applications of dynamical systems. Applications cover an ever widening range of disciplines, from the various physical sciences to the life sciences, engineering and the social sciences. Notable is the growing body of work in mathematical biology, particularly the applications of network dynamics to gene expression and virology. In this context, we also note that the SIAG was well represented at the 2012 meeting of the Activity Group for the Life Sciences in San Diego.
- Several members of the SIAG are particularly active in the international program of "Mathematics of Planet Earth 2013" (MPE2013). More than 100 scientific societies, universities, research institutes, and organizations all over the world have joined forces to dedicate 2013 as a special year for the Mathematics of Planet Earth. Dynamical systems provide the common language for the description of many phenomena in the Earth's climate system. Mary Lou Zeeman (Bowdoin, Past Chair of SIAG/DS) is on the Organizing Committee of MPE2013, Hans Kaper (Georgetown University, current Chair of SIAG/DS) is on the Publicity and Public Awareness Working Group of MPE2013, and many members of the SIAG participate in special workshops, lectures, working groups and symposia. The MPE2013 Web site (<http://mpe2013.org>) hosts a daily blog, where many posts refer to applications of dynamical systems.

- Climate dynamics are featured in several minisymposia at the 2013 Snowbird meeting, as well as at the meeting of the Activity Group in the Geosciences in Padua, Italy, in June 2013. A particularly hot topic is that of "tipping points," a manifestation of a bifurcation in the state of a climate system. A meeting on the topic is scheduled for September, 2013, in Edinburgh, where several members of the SIAG are among the organizers and invited speakers.
- The area of stochastic dynamical systems has found important applications in the financial mathematics. The topic is alive and well represented at the Snowbird meeting.
- Computational methods are being pursued vigorously, the arsenal of software programs is steadily expanding with codes for extended systems and complex systems.

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 SIAG remains vibrant. Its membership has been increasing monotonically since 2002 and stood at 1,363 (637 students, 723 non-students) at the beginning of 2012. Of the membership, 18% are female, 29% are from outside the US, 81% are from academic institutions and 60% are from departments of Mathematics or Mathematical Sciences. (Need to check this!)
- Attendance at the Snowbird meeting has been increasing and has reached a critical limit. The number of participants is close to the capacity of the Snowbird Ski Lodge, and the number of minisymposia that can be accommodated in the program is currently limited by the number of breakout rooms at the Lodge.
- The DSWeb magazine and portal enjoy great popularity, with approximately XXXX visits during 2012. (James Haines please provide) The integration of social media in DSWeb, announced in the last charter renewal, has been postponed until a new content management system for DSWeb is put in place.

- The SIAG keeps its members informed of changes in the field through the DSWeb magazine and the close involvement of the SIAG with the editorial team of the SIAM Journal on Applied Dynamical Systems (SIADS).
- The chair of SIAG/DS , Hans Kaper, has assumed the newly created position of editor-in-chief of SIAM News, and several SIAG members serve on the editorial board. Evelyn Sander is the SIAG/DS liaison with SIAM News.
- The SIAG membership has been active in publishing in various SIAM Journals. We mention the articles XXX, YYY, and ZZZ.

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.

- The SIAG/DS sponsors the biennial SIAM Conference on Dynamical Systems ("Snowbird" meeting). The list of past conferences may be found at <http://www.siam.org/meetings/archives.php#DS>. The 2011 Snowbird meeting (DS11) had 830 attendees. This is close to the capacity of the Snowbird Ski Lodge. The SIAG is exploring possible alternative locations.
- The chair of the SIAG/DS, Hans Kaper, is on the Organizing Committee of the SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS13) sponsored by the SIAG on Geosciences, held at the University of Padua, Italy, June 17-20, 2013.

4. Please indicate the number of minisymposia directly organized by the activity group at the two SIAM Annual Meetings. When did the SIAG last organize a track of minisymposia at an annual meeting?

- The SIAG/DS had a track at the 2008 SIAM Annual Meeting in San Diego and is scheduled to organize a track at the 2014 SIAM Annual Meeting in Chicago.

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?

- The SIAG/DS gives out three awards at the biennial Snowbird meeting.
- The Jürgen Moser Lecture, established in 2000, is awarded to a person who has made distinguished contributions to dynamical systems or nonlinear science. The prize consists of a special lecture along with a cash prize of \$1,000. The 2013 Moser Lecture was given by Nancy Kopell (Boston University). In the opinion of the Officers and members of the Advisory Board of SIAG/DS, the cash award is no longer commensurate with the prestige of the prize and have proposed to increase the amount to \$5,000. A five-year effort to increase the level of endowment for the Moser Lecture from \$5,000 to \$50,000 has been initiated.
- The J.D. Crawford Prize, also established in 2000, is awarded to a person for recent outstanding work on a topic in dynamical systems or nonlinear science as evidenced by a publication (in English) in a peer-reviewed journal within the last four years. The award will consist of a plaque, a certificate, and a cash award of \$750. The 2013 JD Crawford prize was awarded to Panayotis G. Kevrekidis (University of Massachusetts, Amherst).
- The Red Sock Award, elevated to the status of a recognized SIAM prize in 2012, is awarded for the best poster presentation in dynamical systems by a student or postdoc. Four winning posters are selected at the conference.
- DSweb continues to be widely read, and the portal is an invaluable tool for keeping our community together. At the SIAG Business meeting at the 2011 Snowbird meeting several members indicated that the SIAG needs to take the lead on a move towards social media.
- The Teaching Dynamical Systems contest (more details needed).

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

- The SIAG will organize a track at the 2014 SIAM Annual Meeting (AN14) in Chicago. Lennaert van Veen is the SIAG representative on the Organizing Committee.

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

- Continued technical support for the DSWeb portal, including future work on integrating social media;
- Assistance in finding suitable locations for future SIAG/DS meetings;
- Continuing to provide financial support for the Jürgen Moser Lecture, J.D. Crawford Prize, and the Red Sock Award.

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

- The SIAG supports new applications of mathematics, for example through the choice of plenary speakers at the Snowbird meetings. There is a strong tradition in having invited speakers (and consequent minisymposium sessions) from outside the discipline.
- At the 2011 Snowbird meeting, an “In Memoriam” display was included to commemorate several recently deceased pioneers of the community. This display was well received by the meeting participants and repeated at the 2013 Snowbird meeting (???) The SIAG suggests that this initiative be emulated by other SIAGs.
- The SIAG expects that its experiences with DSWeb and the forthcoming move toward social media will benefit the wider SIAM community.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2014.

Signed

Hans G. Kaper (electronic signature)

July 1, 2013