

CHARTER RENEWAL APPLICATION

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Nonlinear Waves and Coherent Structures (SIAG/NWCS). The SIAG/NWCS was originally formed under the aegis of SIAM on December 7, 2002 by the SIAM Board of Trustees and on March 26, 2003 by the SIAM Council with its initial operating period beginning January 1, 2003 and ending December 31, 2005. Its charter has been renewed by the council and board two times thereafter. This SIAG has 202 members as of December 31, 2007.

According to its Rules of Procedure, the objective(s) of the SIAG/NWCS are:

- to foster activity in the area of nonlinear waves and coherent structures.
- to foster collaborations among applied mathematicians, physicists, fluid dynamicists, engineers, biologists, and economists in those areas of research related to the theory, development, and use of nonlinear waves and coherent structures.
- to promote and facilitate nonlinear waves and coherent structures as an academic discipline.

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

Its proposed functions are:

- 1) Organize a biennial SIAM Conference on Nonlinear Waves and Coherent Structures.
- 2) Consider dovetailing specialized workshops and conferences with the SIAM Annual meeting. In particular, it is planned to have the biennial meeting alternate loosely between university-style meetings, ones dovetailed with SIAM Annual Meetings, and joint meetings with other SIAGs.
- 3) Broker partnerships between academia, industry, and government laboratories. The SIAG will seek to facilitate the establishment of academic programs in nonlinear waves and coherent structures to foster its development as an academic discipline. The SIAG also will facilitate the placement of undergraduate and graduate students in internships in industry and government laboratories.
- 4) Work with other professional societies to promote nonlinear waves and coherent structures. For example, SIAM and another society might organize a workshop on a topic of mutual interest. The SIAG also would attempt to increase government support for nonlinear waves and coherent structures through various outreach activities.

The SIAG/NWCS 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?

Coherent structures and nonlinear waves continues to be a vibrant research area, with research spanning the entire spectrum from applications in nonlinear optics, fluids, biology and oceanography to theoretical work on patterns and waves in dissipative PDEs, dispersive wave equations and conservation laws. Over the past three years, major developments occurred, for instance, in our understanding of periodic waves, both in applications (eg in photonic lattices) and, from a theoretical perspective, in Hamiltonian PDEs and conservation laws.

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 activity group is still increasing in size: it now has 202 members compared with 167 in January 2007. Attendance of its biennial conference has also increased. Since its formation in 2002, the activity group has attracted new members from a wider range of areas and, as a result, has become more diverse. The organizing committees of the conferences sponsored by the SIAG actively solicit minisymposia from many colleagues to ensure that changing as well as new areas are well represented.

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 two years, the activity group organizes a major conference on nonlinear waves and coherent structures. These conferences have been very successful and attendance has so far increased steadily. The last conference, NW06, took place in 2006 in Seattle and was attended by around 250 participants. The next conference, NW08, will be held in July 2008 in Rome/Italy: we expect around 300 participants. In conjunction with these two conferences, the activity group has organized Training Workshops for graduate students and postdocs: each workshop consists of four lecture series that give an overview of new techniques and applications. The first 2-day training workshop on "Stability and Instability on Nonlinear Waves" preceded the SIAG conference in Seattle and was a great success with around 60 students and postdocs attending. The topic of the next 2-day training workshop in Rome is "Multidimensional Localized Structures".

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 activity group has so far not directly organized minisymposia at SIAM's annual meeting. It will, however, develop a track (topical speaker plus minisymposia) for the annual meeting in 2009.

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

The main activities besides the biennial conferences are the training workshops that the activity group organizes. For the upcoming workshop in Rome, the activity group secured \$20k in funding from the NSF to support students and postdocs from US institutions. By the end of this year, we will also have a website up and running which will contain a conference/workshop calendar and other relevant information.

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

The activity group will continue to organize a biennial conference. We also propose that the activity group continues to hold training workshops that precede the biennial conference as these will help us informing students and postdocs of new trends, applications and techniques in the field.

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

The main difficulty in organizing the NW08 conference was to negotiate and select the conference site. It would be very helpful if SIAM could supply budgets of similar or previous conferences and if more guidance was given on the respective responsibilities of local organizers and the SIAM office.

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

The biennial conferences organized by the activity group showcases the use of applied mathematics in many different applied problems. The training workshops provide an excellent networking opportunity for students and postdocs.

The SIAG/NWCS requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2009.

Signed

Bjorn Sandstede
[SIAG/NWCS Chair]

21 April 2008
[Date]