CHARTER RENEWAL APPLICATION FOR THE SIAM ACTIVITY GROUP ON LINEAR ALGEBRA

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Linear Algebra. The SIAG/LA was originally formed under the aegis of SIAM on July 19, 1982 by the SIAM Council and July 20, 1982 by the SIAM Board of Trustees. Its initial operating period began January 1, 1983 and ended December 31, 1985. Its charter has been renewed by the Council and Board 9 (nine) times thereafter. This SIAG had 853 members, including 374 student members, as of 12/31/2011. According to its Rules of Procedure, the objective(s) of the SIAM Activity Group on Linear Algebra is to identify and explore the links between linear algebra and other applied sciences, to stimulate the applications of linear algebra, and to foster research in linear algebra and its applications. Within the framework of SIAM, the group will conduct activities that implement its purposes.

Its purposed functions were:

The SIAG on LA will organize activities in Linear Algebra. The SIAG is expected to:

(1) Subject to the conditions of ARTICLES III and IV, the SIAM Activity Group on Linear Algebra will conduct sessions at regular SIAM meetings, conduct special meetings, and participate in organizing publications in the areas of linear algebra and its applications.

(2) The SIAG shall not present awards or otherwise recognize scientific achievement, professional service, or the like without prior approval by both the SIAM Major Awards Committee and the SIAM Council of the award criteria; the method of selection of recipient(s), the nature of the award, and all other aspects, if any, of each such award must have the prior approval of the SIAM Board of Trustees.

Other activities can 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 triennial SIAM Conference on Applied Linear Algebra. 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) Award the triennial SIAG Linear Algebra Prize, established in 1987.

(8) Maintain a website for the activity group (`http://www.math.temple.edu/~siagla/`).

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).
Michele Benzi (Chair), Andreas Frommer (Vice-Chair), Sue Thorne (Secretary), Chen Greif (Program Director). In addition, James Nagy acts as Linear Algebra representative on the SIAM News Board, and Valeria Simoncini as liaison with the SIAM Book Program.

(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 three years?
The field of Applied Linear Algebra is as vibrant and active as ever. Traditional areas remain very important, but new ones keep coming to the forefront motivated by novel applications. There have been major recent advances in randomized linear algebra algorithms, communication-avoiding algorithms for emerging computer architectures, tensor computations, iterative methods for indefinite linear systems and least-squares, new techniques for matrix functions and matrix equations, solvers and preconditioners for hierarchical and semi-separable matrices, novel applications in uncertainty quantification, model order reduction, data mining, material science, network science, and so forth. The 2012 SIAM Conference on Applied Linear Algebra, to be held in Valencia, Spain, June 18–22, has set a new record: with over 470 registered participants as of May 28, 2012, it is the largest SIAM Applied Linear Algebra Conference ever. This is a good indicator of the excellent health of the field.

(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?
The activity group had 853 members at the end of 2011, slightly up from 842 at the end of 2010, following years of steady growth. The number of student members (close to 400) is somewhat higher than for other SIAGs. The SIAG has been very active, with involvement in several conferences, the ISSNLA Summer School (see below), the SIAGLA Prizes, the Newsletter, etc. The SIAGLA is keeping up with changes in the field by organizing and soliciting minisymposia and tracks at SIAM conferences on emerging topics, by selecting researchers at the forefront of these fields as plenary speakers at the SIAM Applied Linear Algebra Conference (as well as ILAS), and by organizing the triennial International Summer School on Numerical Linear Algebra around such topics. The broader interests of SIAM are served by the SIAG in various ways, for instance organizing minisymposia on applications of linear algebra that have considerable overlap with other areas of applied and industrial mathematics, such as optimization, incertainty quantification UQ, data mining, PDEs, etc. Finally, the SIAGLA solicits submission of articles on linear algebra to SIAM News.

(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 SIAGLA organizes the triennial conference on Applied Linear Algebra. The list of these conferences may be found at: `http://www.siam.org/meetings/archives.php#LA`. *Since the last charter renewal application was approved, two SIAM ALA Conferences have been organized: one in Monterey, California on October 26-29, 2009, with 327 attendees; and the one in Valencia, Spain, to be held on June 18-22, 2012, with over 470 registered participants. Both of these conferences have been very successful (for the Valencia one we are taking the record number of registered participants and submitted abstracts/minisymposia as a clear indication that it will be a success). For the sake of comparison, the 2006 SIAM ALA Conference (held in Düsseldorf, Germany) had just over 250 registered participants and the 2003 one (held in Williamsburg, VA) had less than 250. In addition, the SIAGLA has co-sponsored or endorsed several other linear algebra conferences over the last three years. These are: The 16th ILAS Conference (Pisa, Italy, June 21-25, 2010); the XVIII Householder Symposium on Numerical Linear Algebra (Tahoe City, CA, June 12-17, 2011); the 17th ILAS Conference (Braunschweig, Germany, August 22-26, 2011); and the 3rd IMA Conference on Numerical Linear Algebra (Birmingham, UK, September 10-12, 2012). The SIAGLA's involvement in the ILAS Conferences usually consists of having one SIAGLA officer represent SIAM on the organizing committee, and selecting one of the plenary speakers, to be identified as "the SIAGLA Speaker" on the conference materials; SIAM covers all the expenses for this speaker.*

(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 of minisymposia at an annual meeting or meet jointly with the SIAM Annual Meeting?

The SIAGLA organized tracks at the following meetings: SIAM AN10 (four), and ICIAM 2011 (twelve). Linear Algebra was one of the themes of SIAM AN10. There has never been a SIAM ALA meeting held jointly with a SIAM AN meeting.

(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?

The SIAGLA Prize for the best paper in the field of applied linear algebra is awarded every three years at the SIAM ALA meeting. In 2009 the prize went to Zlatko Drmač and Kresimir Veselič for their paper "New Fast and Accurate Jacobi SVD Algorithm, Parts I-II", SIAM Journal on Matrix Analysis and Applications, 29 (4), pp. 1322-1342 and 1343-1362 (2008). Michele Benzi was Chair of the Prize Committee. The 2012 prize will be split between the authors of two papers: Grey Ballard, James Demmel, Olga Holtz, and Oded Schwartz ("Minimizing Communication in Numerical Linear Algebra", SIAM Journal on Matrix Analysis and Applications, 32: 866-901, 2011) and Sou-Cheng T. Choi, Christopher C. Paige, and Michael A. Saunders ("MINRES-QLP: A Krylov Subspace Method for Indefinite or Singular Symmetric Systems, SIAM Journal on Scientific Computing, 33:1810-1836, 2011). Andreas Frommer was Chair of the Prize Committee. The SIAGLA also maintains a web site (`http://www.math.temple.edu/~siagla/index.html`*) and issues a Newsletter, typically on the first Monday of each month. Both of these have been fairly active in terms of postings and submissions. Secretary Sue Thorne has been the main person behind them, with*

Program Director Chen Greif assuming responsibility for both the website and the Newsletter during Sue's recent maternity leave. Last but not least, a major event bearing the mark of the SIAGLA is the International Summer School on Numerical Linear Algebra, which is held every three years (Michele Benzi has been Chair of the ISSNLA Steering Committee since 2009; see `http://www.math.temple.edu/~siagla/summer.html` *for additional information). In 2010 the ISSNLA was held in Selva di Fasano (Italy), and it was also the first Gene Golub SIAM Summer School. This was a great success, with 40 students from many countries (selected out of 120 applicants) attending two weeks of lectures by James Demmel, Volker Mehrmann, Charles Van Loan and Margaret Wright. The SIAGLA is also organizing the 2013 ISSNLA, which has been again approved for funding by the Gene Golub SIAM Summer School and will take place in Shanghai, China, in August 2013.*

(7) What activities are planned and proposed for the next period of the charter? Please describe scheduled and suggested future activities in detail.
The main events planned are: SIAM ALA 12, and the 2013 ISSNLA/Gene Golub SIAM Summer School. In addition, the SIAGLA is involved in the 2013 ILAS Conference (Providence, RI, June 3-7) and in the XIX Householder Symposium (will take place near Spa, Belgium, June 8-13, 2014). Preparations are under way to select a location and co-chairs for the 2015 SIAM ALA meeting; in addition, SIAGLA members will submit minisymposia proposals for the SIAM AN meetings in 2013 and beyond. It should be mentioned that the four current SIAGLA officers are reaching the end of their term in December 2012; a nominating committee, chaired by Esmond Ng (LBNL), has been formed to identify candidates for the four officer positions. Election of new officers will take place in the Fall of 2012.

(8) How can SIAM help the activity group achieve its goals?
SIAM has been very supportive of the SIAGLA activities and we hope to see this support continue. SIAM can help SIAGLA thrive by advertising the SIAGLA activities more broadly, especially the ISSNLA/Gene Golub SIAM Summer School, and perhaps by holding one of the future annual meetings in conjunction with a SIAM ALA meeting.

(9) How can the activity group help SIAM in its general role of promoting Linear Algebra?
The SIAGLA has been very active in terms of conference organization and co-sponsorship, minisymposia and tracks at other meetings, the award of the SIAGLA Prize, the Summer Schools, the web site and the Newsletter. A possible contribution of the SIAGLA in the near future could be to organize a survey of current uses of (and needs for) linear algebra in industry. One such survey was organized more than 30 years ago by Steve Campbell, Carl Meyer (first SIAGLA Secretary) and Nicholas Rose and published in Linear Algebra and its Applications, 38 (1981), pp. 289–294. It would be perhaps valuable and interesting to organize a survey of this kind again.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a three year operating period beginning January 1, 2013.

Michele Benzi
SIAG/LA Chair
31 May 2012