

Center for Advanced Mathematical Sciences (CAMS)

Director: Wafic A. Sabra

Faculty Members

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International Advisory Committee

Sir Michael Atiyah (Chairman), University of Edinburgh, UK

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R. Jackiw, Massachusetts Institute of Technology (MIT), Cambridge, USA

N. Khuri, Rockefeller University, New York, USA

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E. Vesentini, President, *Accademia Nazionale dei Lincei*, Rome, Italy

In addition to their scientific distinction, many members of the above group are highly experienced scientific leaders and have been involved in running some of the world's top institutions in mathematics and physics. Their skills and contacts have been of great value to CAMS.

The committee's main task is to advise the president of AUB and the director of CAMS on scientific policy and programs. We are fortunate that they have also accepted the task of advising the president on all senior fellow appointments and the appointment of the director. Thus all scientists who receive private funding raised by the center are evaluated by an independent and highly competent outside international group in addition, of course, to the standard internal university evaluations.

Introduction

A number of universities have recognized the significance and power of recent revolutionary advances in science and mathematics, and have established centers to provide a focused environment to improve methods of teaching and research. The scientific areas in which these revolutionary advances are taking place include pure mathematics, numerical methods, applied mathematics, theoretical physics, theoretical computer science, financial mathematics, and mathematical biology. Contributions to new questions, methods, and knowledge in these fields now come from every continent, particularly now that international collaboration in the mathematical sciences has been facilitated to an unprecedented extent by rapid developments in information and communication technology.

The American University of Beirut has now established a Center for Advanced Mathematical Sciences (CAMS), the first such center among the institutions of higher learning in the Arab world. Given the seminal historical role of the Arab Middle East in the development of mathematics and astronomy, it is appropriate for the region to have such a dedicated center for advanced teaching and research. The establishment of the center is also especially timely, in view of the significant scientific talent in the region and among its diaspora, and in view of the central importance of mathematical inquiry to the region's scientific, technological, and economic development.

CAMS Objectives

The Center for Advanced Mathematical Sciences (CAMS) provides a vehicle for promoting research and graduate studies in the mathematical sciences, as well as a focal point for collaborative research among scientists and mathematicians in Lebanon and the region at large. Its aims are to

- conduct research in the sciences and engineering, with special emphasis on the mathematical aspects of research. In this regard CAMS acts as a regional research facility in various mathematical sciences such as theoretical physics, pure and applied mathematics, computer science, engineering, and a variety of fields in computational science
- promote and contribute to the graduate programs in the mathematical sciences and engineering at AUB
- promote postdoctoral research and education at AUB and at other local universities, and foster a multi-disciplinary environment encompassing various areas of mathematical science
- assist the university community at large in integrating the use of high performance computing into the various academic and administrative programs by capitalizing on the expertise developed by the scientific and professional staff of CAMS
- identify and pursue promising new fields of science and engineering that might be integrated within CAMS and the university
- act as a focal point for promoting collaborative research among scientists in the region, partly by accommodating visitors for various intervals of time, and also by organizing topical meetings, workshops, and conferences in different fields

CAMS has begun to enhance AUB's academic programs by attracting world-class faculty, and by strengthening teaching and research in mathematics and physics at the University. In fulfilling these roles, CAMS encourages promising young students to enter careers in mathematics and allied disciplines, including applied areas crucial to economic growth.

Program Description

CAMS facilitates the research and teaching activities of a core of world-class permanent faculty members at AUB (senior fellows of CAMS).

- CAMS conducts a program of visiting scholars who come to AUB for varying time intervals to do research and to offer lectures, seminars, workshops, or short courses.
- CAMS organizes international and regional workshops, topical meetings, and conferences around its faculty, staff, and visitors.
- CAMS is accessible to faculty members at other universities in Lebanon and the region. They work at CAMS as associate scholars.
- CAMS sponsors visits by its faculty, AUB graduate students, and postdoctoral fellows, to the USA and Europe, to conduct research, present papers, or attend workshops and seminars.

Facilities

CAMS occupies 450 square meters in the recently completed College Hall at AUB. The seminar room at CAMS has a state-of-the-art multimedia room.

The computing system of CAMS is by far the most powerful in Lebanon and neighboring Arab countries. The connectivity to the Internet and to electronic sources of scientific literature is excellent. Scientists can perform highly demanding computations on the clustered workstations.

Administration and Staffing

CAMS is a university-wide entity. It is managed by a director, appointed as a full-time faculty member, who works in consultation with an international advisory committee and the appropriate university administrators. CAMS is staffed by permanent faculty, visiting scholars, research associates, associates from different universities in Lebanon and the region, an assistant to the director, and a computer system administrator.

- Permanent faculty members of the center, designated as senior fellows, also serve as regular faculty in various departments and schools within the University. As such, they have all the duties, privileges, and responsibilities of full-time faculty. They teach graduate and advanced undergraduate courses, and guide graduate students toward doctoral degrees in their various disciplines.
- Visiting scholars are appointed for a limited period of time without being regular full-time faculty at the University. Their main duty is research in their respective fields. Courtesy appointments may be extended to them in appropriate departments, and they may be assigned part-time teaching duties.
- Research associates are normally appointed for a period of two years.
- Associates (faculty and researchers from other universities) are appointed for various periods of time.
- The assistant to the director helps with the smooth running of the daily affairs of the center. The system administrator monitors all computer operations at the center.