

## Inaugural Issue Editorial: Communications in Applied and Industrial Mathematics

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It is with great pleasure that we welcome you to the inaugural issue of *Communications in Applied and Industrial Mathematics* (CAIM), the newly founded official journal of SIMAI, the Italian Society of Industrial and Applied Mathematics.

Ambitiously, CAIM wants to cover applications of mathematics to the solution of problems in industry, technology, environment, cultural heritage, and natural sciences, with a special emphasis on new and interesting mathematical ideas relevant to these fields of application.

We believe that all these application areas are a rich source of problems for mathematics. The inherent complexity and multiscale nature of many industrial as well as physical processes gives rise to substantial challenges, which must be addressed as an interdisciplinary joint effort between mathematicians, computational scientists and domain experts. Tackling these challenges involves necessarily the use of approaches and methods that fall within the domain of applied mathematics, including physical and analytical or numerical methods, simulations for more accurate predictions or experimental observations of complex phenomena, and procedures of verification/validation of numerical and experimental methods. Solution of industrial problems does not simply mean use of well known mathematical tools, but in most cases calls for the invention of new methods that ultimately contribute to fundamental aspects of mathematics. In this context, it is not surprising that several recent cross-disciplinary approaches to

mathematical research are contributing to the advancement of mathematical sciences themselves.

As part of the continuing effort of SIMAI of ensuring the strongest interactions between mathematics and other scientific and technological communities CAIM will begin by publishing three issues per year. To ensure maximum exposure, the content of the journal is released under open-access. An internationally renowned Editorial Board will set the standards for rigorous review and top quality publications. More information on the journal and the submission procedure can be found at the CAIM homepage: <http://caim.simai.eu>

The inaugural issue of CAIM is dedicated to the memory of Angelo Marcello Anile and Carlo Cercignani. It contains scientific contributions of young researchers who have participated to the workshop entitled *Prospettive di sviluppo della Matematica Applicata e Industriale in Italia 2009. In memoria di Angelo Marcello Anile* held in Roma on October, 9 2009.

The workshop was very stimulating, featuring high level contributions in different fields of applied and industrial mathematics. With their work, the young researchers have demonstrated that there still exists in Italy a reservoir of qualified researchers that hopefully will contribute in a near future to the competitive development of the nation and to research in general.

This is clearly reflected in the contributions that appear in the present issue that covers: modeling of complex biological systems, continuum mechanics, kinetic and transport theory methods, vehicular traffic forecasts, inverse problems, optimization and imaging methods, statistical analysis, environmental, health and industrial applications.

We trust that this first issue gives a significant contribution to the interaction of mathematics with industrial and applied sciences. We believe that the issue of this inaugural number represents an important starting point towards the achievement of one of the main scopes of CAIM. Our objective is for CAIM to provide a platform for scientists who cooperate in different fields including pure and applied mathematics, computer science, engineering, physics, chemistry, biology, medicine. With the help of the Editorial Board, and of all the contributors, we hope that the role of CAIM in reaching a broad and widely distributed interdisciplinary forum and in linking scientist with professionals active in industry, research centres, academia or in the public sector will become more and more prominent.

Finally, we take this opportunity thank all our Associated Editors and all people who have made possible the appearance of this journal. The technical support has been provided by Nunzio Femminò, Dario Orselli (CAB, Messina University) that we would like to thank very much for their

time and efforts.

Also, we would like to thank everyone who has taken the time and the trouble to submit their work to this new journal. We thank you for reading and choosing to publish your own papers here in *Communications in Applied and Industrial Mathematics*.