FOREWORD

In this special issue of the Braz. J. Phys. we publish the proceedings of the X Latin American Workshop on Plasma Physics (LAWPP) combined with the 7th Brazilian Meeting on Plasma Physics (7o. Encontro Brasileiro de Física de Plasmas, EBFP). These events were held in São Pedro, São Paulo, Brazil, from November 30 to December 5, 2003. The LAWPP has no permanent tie to any regional physics organization, and takes place every 2 years. The EBFP is a regular meeting supported by the Brazilian Physical Society, SBF. It usually takes place every odd year, with the support of several Brazilian organizations (CAPES, CNPq, FINEP, FAPESP) and of the graduate programs of some Brazilian universities. This is the first time these meetings were held simultaneously, with the additional support of the International Center of Theoretical Physics, ICTP, and the Centro Latin-Americano de Física, CLAF. Also, this is the first time that a collection of contributed works and invited talks presented at the joint EBFP+LAWPP meeting is being published by the Braz. J. Phys.

The Brazilian Meeting on Plasma Physics as well as the Latin American Workshop on Plasma Physics are now consolidated events, covering experimental, observational, and theoretical investigations, from low-temperature plasmas to fusion plasmas, from industrial applications to space plasma physics. During the 7 EBFP + X LAWPP, we have had the opportunity of learning the most recent achievements by researchers from many different countries. The Organizing Committee received 245 abstracts, distributed among four main areas (67 abstracts of Basic Plasma Physics, 40 of Space and Astrophysical Plasmas, 82 of Technological Applications of Plasmas, and 56 of Thermonuclear Fusion-Magnetic Confinement). There were 236 registered participants. However, the conference was actually attended by 177 participants (113 researchers with a doctor degree, 54 graduate students - 16 at masters level and 38PhD students - and 10 undergraduate students). There were 177 submitted abstracts: 17 invited talks, 21 oral communications, and 139 posters. There were also two special sessions. The Burning Plasma Session was organized by Dr. Julio Herrera, from Mexico. The international magnetic confinement fusion program has made huge advancements throughout the past few decades, fostering the development of plasma science and fusion technology. In the 1990's, the Tokamak Test Fusion Reactor (TFTR), in the USA., and the Joint European Torus (JET), in Europe, allowed the development of experiments with mildly-burning plasmas, using deuterium and tritium mixtures, in which energy from the fusion alpha particles provided a fraction of the heating for a few seconds. A new generation of devices has been proposed, which would have as one of their main goals to reach a plasma state in which the alpha particle self-heating is the dominant energy source of the plasma. These devices (IGNITOR, see www.frascati.enea.it/ignitor, FIRE, see www.fire.pppl.gov, and the International Test Experimental Reactor, ITER, see www.iter.org) have different goals, schedule, and budget. However, they share the common purpose of carrying out the experimental investigation of burning plasmas, which remains a challenge for plasma physics, and is a necessary step in the fusion energy development. The purpose of this special session was to present the challenges and the physics issues that will be faced in this new step of fusion research. Dr. Carlos Varandas, who is the head of the Centre for Nuclear Fusion of the Technical Superior Institute of Lisbon, and Chairman of the EFDA Steering Committee, presented an overview of the European Fusion Program, with emphasis on the ITER activity, leading to the study of burning plasmas. Dr. Francesca Bombarda, from the ENEA, at Frascati, Italy, presented the IGNITOR project (see paper in this issue), and Dr. Gerald Navratil, from the University of Columbia, USA, discussed the assessment that a group of fusion scientists made of the FIRE, IGNITOR and ITER projects at the Snowmass Meeting last year. The Tribute Session was a suggestion of the Organizing Committee. It was also suggested that in every EBFP we select a name to be honored during the next meeting. This Organizing Committee selected Dr. Darcy Dillenburg, one of the pioneers in the field of Plasma Physics in Brazil, and the chairman of the first Encontro Brasileiro de Física dos Plasmas, held in Santos, São Paulo, Brazil, from December 10 to December 13, 1991.

We hope that this special issue will give an opportunity to assess the quality of this meeting.

M. Virgínia Alves
Iberê L. Caldas
Ricardo L. Viana
Guest Editors