Preface

ICOSAHOM'95 was the third International Conference On Spectral And High Order Methods. The first two meetings were held in 1989 in Como, Italy and in 1992 in Montpellier, France. ICOSAHOM'95 was held in Houston, Texas, in June, 1995.

These proceedings of ICOSAHOM'95 represent almost all of the talks presented at the meeting. All of the papers being published here (and many more that were submitted but not accepted) were subjected to a rigorous refereeing process which has resulted in a uniformly high standard. This refereeing process was a principle responsibility of the Scientific Committee, which consisted of Ivo Babuška, Christine Bernardi, Claudio Canuto, Michel Deville, Roland Glowinski, David Gottlieb, Heinz Kreiss, Yvon Maday, J. Tinsley Oden, Anthony Patera, Alfio Quarteroni and Ridgway Scott. The high quality of these proceedings is a direct consequence of the hard work of the Scientific Committee.

With a frequency of three years, ICOSAHOM has played the role of an international "congress" in the field of spectral and high order methods. Researchers save their best work for presentation at the meeting, and the resulting proceedings are essential reading for people ranging from casual users of spectral and high order methods to researchers active in developing new algorithms or theoretical analyses for spectral and high order methods.

To provide some guidance to the readers, we have organized the papers into eight separate areas: Spectral Methods, Finite Elements, Spectral Elements, Finite Differences, Domain Decomposition, *h-p* Methods, Multigrid Methods, and Parallel Computations. However, such boundaries are often artificial, as one paper could easily be put in two or even three different groupings. This reflects the synergism among the different aspects of the field.

Among several noteworthy events at the meeting, one demands special mention. In recognition of the award of the third Giovanni Sacci Landriani prize to Professor Anthony Patera of MIT, a mini-symposium on Parallel Computations was organized by Professor Patera. The talks in this mini-symposium are all represented by the papers in the final section of the proceedings.

Giovanni Sacchi Landriani was a brilliant young researcher specializing in numerical methods for partial differential equations. He worked at the University of Pavia until he was killed in a traffic accident at the tragically young age of 31 in 1989. Sacchi Landriani had been a very fertile researcher with about fifteen published papers. His most significant contributions concerned the design and analysis of algorithms for the solution of the Navier-Stokes equations, with an emphasis on spectral methods and domain decomposition methods. The Giovanni Sacchi Landriani prize was established in his memory.

ICOSAHOM'95 had an active program in the evenings to refresh the participants and to introduce them to a small bit of the Texas way of life. These events included trips to Space Center Houston (the recently opened facility for visitors to the NASA Johnson Center, command post for all the U.S. space flights), to the Astrodome

(to study the intricacies of the Great American Sport, baseball) and to the Post Oak Ranch (to study country dancing, including the famous Texas Two Step – the conference presentation by Oden introduced an apparent generalization, the Texas Three Step).

The participants were hosted in grand style by the historic Warwick Hotel, with meeting rooms on the top floor overlooking all of Houston. Lunch was served each day outdoors on the spacious patio by the lovely swimming pool. A dip in the pool provided instant rejuvenation for many of the participants each day. This was also the site of the conference "pool party" which featured a banquet of Mexican fajitas served pool-side. Dress was casual for this central social event of the meeting. Many were appropriately attired to participate fully in this typically Texan form of entertainment.

The local Organizing Committee for the meeting included Cristina Draghicescu and Garrett Etgen (in addition to the Editors), and we note that the efforts of this committee were key to the success of the meeting. They received assistance from Babak Bagheri and Mircea Draghicescu regarding the intricacies of TEX. However, most of the real work was done by the conference manager. Initially this was Leigh Ann Jacks, but the majority of the time it was Susan Owens, who tended to all the complexities of the meeting and acted as tour guide for the various extra-curricular events made available to the meeting participants. Susan was ably assisted by Dennisse De Armas before, during and after the meeting.

Susan Owens also acted as production editor for these proceedings. As everyone at the meeting was fully aware, the meeting and the resulting proceedings would not have happened without her!

The meeting was generously supported by the National Science Foundation via grant DMS-9423049, by the University of Houston and the Texas Center for Advanced Molecular Computation. We especially acknowledge the role of Dean John Bear of the College of Natural Sciences and Mathematics at the University of Houston who was instrumental in obtaining support for the meeting and also opened the meeting with his welcoming remarks. We would also like to express our appreciation to the Houston Journal of Mathematics for publishing these Proceedings.