Journal of Applied Mechanics

Guest Editorial

This special issue of the *Journal of Applied Mechanics* contains 19 articles originally presented at ENIEF 2004, the XIV Congress on Numerical Methods and Their Applications, held in San Carlos de Bariloche, Argentina, on November 8–11, 2004. The first Congress in this series was held in 1983. Participation has grown consistently since then, with the 14th Congress attracting over 300 contributing participants—mainly from North and South America and Europe.

Some selected contributions to ENIEF 2004 were expanded and improved by their authors for consideration for this special issue. These submissions were then reviewed by the Guest Editors, and some were then sent out for external reviews. The usual ASME rules governing the selection of journal articles were applied throughout. The outcome of the review process is the 19 articles appearing in this issue.

The topics covered in this issue fairly represent the areas covered by the Association of Computational Mechanics of Argentina. We feel that they will also be of interest to the applied mechanics community at large.

There are nine articles from the field of solid mechanics. They deal with fiber-reinforced composites, fracture, finite deformation, localization, solid mechanics, and plate tectonics.

There are seven articles from the field of fluid mechanics. They deal with velocity-vorticity numerical formulations, prediction of stability boundaries, density currents, internal combustion, and free-surface flows.

The three remaining articles address the simulation of solidification and heat treatment of metals, and fluid-structure interactions.

It is our hope that the readers of the *Journal of Applied Mechanics* will find the width and depth of the coverage in this special issue of interest. We are indebted to the numerous anonymous reviewers who participated in the editorial process: Their critical but helpful reviews greatly aided the authors and the Guest Editors in maintaining the high standards expected in ASME journal publications. We are also grateful to the Editor of the *Journal of Applied Mechanics* for entertaining the proposal of this special issue.

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