Preface

These proceedings contain selected papers associated with the lectures presented at BAIL 2010 (Boundary and Interior Layers – Computational and Asymptotic Methods). This conference was held from 5 to 9 July 2010 at the University of Zaragoza, Spain. The 64 participants came from many different countries, namely: Argentina, China, France, Germany, India, Ireland, Italy, Russia, South Korea, Spain, Sweden, the UK, and the USA. The BAIL series of conferences are the result of an initiative by Professor John Miller, who organized the first three in Dublin in 1980, 1982, and 1984. Subsequent conferences were then held in Novosibirsk (1986), Shanghai (1988), Copper Mountain, Colorado (1992), Beijing (1994), Perth (2002), Toulouse (2004), Göttingen (2006), and Limerick (2008). The next BAIL Conference will be in Pohang, South Korea, in 2012.

Totally 61 lectures were presented at the BAIL 2010, of which 5 were plenary lectures, 17 were given at the mini-symposia Finite Element Methods Using Layer-Adapted Grids and Robust Methods for Time-Dependent Singularly Perturbed Problems, and 39 were contributions on other subjects. The main objective of the BAIL conferences is to bring together researchers interested in boundary and interior layers. This includes mathematicians and engineers who work on their theoretical and numerical aspects, and also those researchers concerned with their application to a variety of areas such as fluid dynamics, semiconductors, control theory, chemical reactions, and porous media.

The lectures presented at the conference showed the diversity of investigations related to these topics. The proceedings provide a unique overview of research into various aspects of singularly perturbed problems and in particular the efficient resolution of boundary and interior layers using numerical methods. They also include examples of applications of this class of problems.

All papers in the proceedings were subjected to a standardized refereeing process. We would like to thank the authors for their cooperation in the publication of their work in this volume of LNCSE and also the anonymous referees for their work and dedication, without which it would have been impossible to produce this publication.

Finally, we wish to thank the sponsors of the conference: the Spanish Government's project MTM2009-07637-E, the Government of Aragón, the University of Zaragoza, and the Instituto Universitario de Matemáticas y Aplicaciones. Our

thanks also go to the members of the Scientific Committee, the organizers of the mini-symposia, all the attendees for their participation in the conference, and the research group Numerical Methods for Partial Differential and Integral Equations for its work in handling all organizational tasks.

January 2010   *Carmelo Clavero*
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