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Nota di contenuto	Foreword -- 1. A Unified Approach to Measuring Accuracy of Error Indicators, by Immanuel Anjam, Olli Mali, Pekka Neittaanmäki and Sergey Repin -- 2. On the Numerical Solution of the Dirichlet Problem for the Elliptic (s2) Equation, by Alexandre Caboussat -- 3. Multiple-Gradient Descent Algorithm (MGDA) for Pareto-Front Identification, by Jean-Antoine Désidéri -- 4. On Alternating Direction Methods of Multipliers: A Historical Perspective, by Roland Glowinski -- 5. Numerical Analysis and Simulation of the Dynamics of Mountain Glaciers, by Guillaume Jouvet and Jacques Rappaz -- 6. Fast Nash Hybridized Evolutionary Algorithms for Single and Multi-Objective Design Optimization in Engineering, by Dong Seop Lee, Jacques Periaux and Sung Wook Lee -- 7. An Augmented Lagrangian Method for the Microstructure of a Liquid Crystal Model, by Ping Lin and Xue-Cheng Tai -- 8. On an Extension of the First Korn Inequality to Incompatible Tensor Fields on Domains of Arbitrary Dimensions, by Patrizio Neff, Dirk Pauly and Karl-Josef Witsch -- 9. A Guide for the Selecting of a

Numerical Methodology Adapted to the Analysis of Extreme Events, by Pierre C. Perrier -- 10. Optimization Under Uncertainty Using the Generalized Inverse Distribution Function, by Domenico Quagliarella, Giovanni Petrone and Gianluca Iaccarino -- 11. Automating the Parameter Selection in VRP: an Off-line Parameter Tuning Tool Comparison, by Jussi Rasku, Nysret Musliu, and Tommi Kärkkäinen -- 12. Comparison of Local Computational Approaches for Unsteady Viscous Incompressible Flows, by Nobuyuki Satofuka, Koji Morinishi, Itaru Tanno, Tomohisa Hashimoto, Takahiro Yasuda, and Yoshihiro Tanaka -- 13. Parameter Rating by Diffusion Gradient, by Guy Wolf, Amir Averbuch and Pekka Neittaanmäki.

Sommario/riassunto

This volume contains thirteen articles on advances in applied mathematics and computing methods for engineering problems. Six papers are on optimization methods and algorithms with emphasis on problems with multiple criteria; four articles are on numerical methods for applied problems modeled with nonlinear PDEs; two contributions are on abstract estimates for error analysis; finally one paper deals with rare events in the context of uncertainty quantification. Applications include aerospace, glaciology and nonlinear elasticity. Herein is a selection of contributions from speakers at two conferences on applied mathematics held in June 2012 at the University of Jyväskylä, Finland. The first conference, “Optimization and PDEs with Industrial Applications” celebrated the seventieth birthday of Professor Jacques Périaux of the University of Jyväskylä and Polytechnic University of Catalonia (Barcelona Tech), and the second conference, “Optimization and PDEs with Applications” celebrated the seventy-fifth birthday of Professor Roland Glowinski of the University of Houston. This work should be of interest to researchers and practitioners as well as advanced students or engineers in computational and applied mathematics or mechanics.