# Advances in Finite Element Analysis for Computational Mechanics

Guest Editors: Magd Abdel Wahab and Nao-Aki Noda



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## *Editorial* **Advances in Finite Element Analysis for Computational Mechanics**

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Received 18 December 2013; Accepted 18 December 2013; Published 13 February 2014

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Although originally developed for stress analysis in complex airframe structures, finite element analysis (FEA) is currently applicable to the broad field of continuum mechanics and many other disciplines. FEA is receiving much attention in academia and industries because of its diversity, flexibility, and ability to provide approximated numerical solutions to a wide range of engineering applications. Recent advances in FEA have led to the development of new elements, solvers, meshing techniques, and tools and to the understanding of many physical problems. Nowadays, with the advances of computer technology, FEA is widely used by scientists and becomes very popular in engineering communities.

The main objective of this special issue is to publish recent advances in FEA and its application to several disciplines, such as structural engineering, civil engineering, aerospace engineering, materials engineering, mechanical engineering, electronics, electrical engineering, and biomedical engineering. A particular emphasis of this special issue is on computational mechanics aspects.

For this special issue, a total number of 64 manuscripts have been received, from which two papers have been withdrawn. After the reviewing process, 33 manuscripts have been rejected and 29 manuscripts have been accepted.

This volume covers different topics on the use of FEA in a wide range of applications including the following: collision contact for reciprocating pump valve by J. Pei et al., 3D topology optimization by M. A. Kütük and I. Göv, nonlinear dynamic analysis of drilling shaft in deep-hole machining by L. F. Kong et al., a biomechanical study on laminectomy and dekyphosis for thoracic ossification of the posterior longitudinal ligament by T. Okayama et al., analysis of hydraulic seals for downhole equipment by L. Xin et al., residual stress induction due to welding process by G. Urriolagoitia-Sosa et al., pear-shaped casing swage by Y. Lin et al., SH wave in multiple orthotropic elliptical inclusions by J. Lee et al., vortex-induced vibration by G. Tang et al. and by H. Wang et al., modeling the multiphysics in pultrusion process by P. Carlone et al., flow erosion on sand discharge pipe in nitrogen drilling by H. Zhu et al., fatigue behaviour of fastening joints of sheet materials by X. He et al., vibration behavior of multiple layered cylindrical shells by M. R. Isvandzibaei et al., damage identification of trusses with elastic supports by N.-I. Kim and J. Lee, biomechanical response and behavior of users underemergency buffer crash by R. Miralbes et al., zonal disintegration mechanism around deep underground openings by Y.-J. Zuo et al., simulation of suspensions, torsion bars, and fifth wheel for semitrailers by R. Miralbes et al., heat insulations for cryogenic tankers by R. M. Buil and D. V. Hernando, ductile fracture for 3Cr20Ni10W2 austenitic heat-resistant alloy by Y.-F. Xia et al., residual stress analysis of planetary gear tooth by J. Wang et al., brittle and ductile fracture using a unified cohesive zone model by J. Liu et al, viscous numerical wave flume by J. Qin et al., nanobeams by F. Marotti de Sciarra, stress analysis in fruits by L. Fenyvesi et al., angle-ply and cross-ply composite plates with shape memory alloy by Z. A. Rasid et al., armor plate response subjected to blast loading by A. M. A. Zaidi et al., circular beams with mixed-mode imperfections by F. Guarracino and M. Fraldi, and, finally, sheet metal stamping processes by A. Quesada et al.

#### Acknowledgment

The editors would like to thank all authors who have contributed to this volume.

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