

## *Books in highlight*



## DESIGN OF STEEL STRUCTURES FOR BUILDING IN SEISMIC AREAS: EUROCODE 8: DESIGN OF STRUCTURES FOR EARTHQUAKE RESISTANCE. PART 1: GENERAL DESIGN OF STEEL STRUCTURES FOR BUILDINGS

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ECCS—European Convention for Constructional Steelwork,  
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### Short description of the context

This volume elucidates the design criteria and principles for steel structures under seismic loads according to Eurocode 8-1. Worked Examples illustrate the application of the design rules. Two case studies serve as best-practice samples.

### Purpose and Motivation of the book

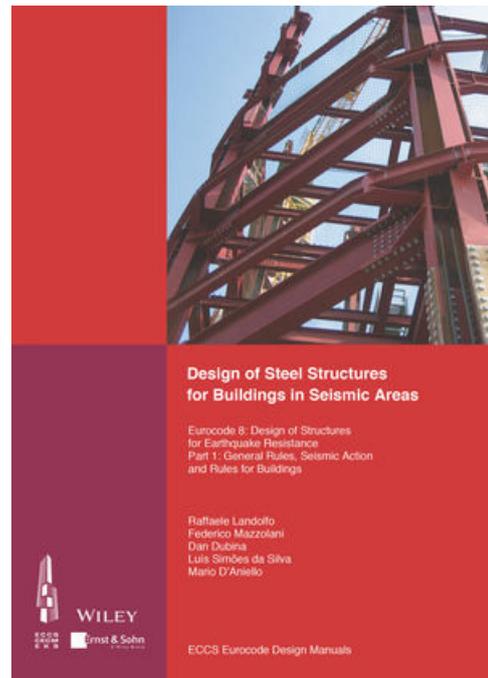
This book is developed with a constant reference to Eurocode 8 or EN 1998-1:2004; it follows the organization of that code and provides detailed explanations in support of its rather dry expression. Of course, there are many other seismic design codes, but it must be stressed that there is nowadays a strong common thinking on the principles and the application rules in seismic design so that this book is also a support for the understanding of other continents codes.

### Summary

**Chapter 1** explains the principles of seismic design and their evolution throughout time, in particular the meaning, goals and conditions set forward by capacity design of structures and their components, a fundamental aspect of seismic design.

**Chapter 2** explains the general aspects of seismic design: seismic actions, design parameters related to the shape of buildings, models for the analysis, safety verifications. Methods of analysis are explained in an exhaustive way: theoretical background, justifications of limits and factors introduced by the code, interest and drawbacks of each method, together with occasionally some tricks to facilitate model making and combination of load cases.

**Chapter 3** focuses on design provisions specific to steel structures: ductility classes, requirements on steel material, structural typologies and design conditions related to each of them; an original insight on design for reparability is also included.



**Chapter 4** provides an overview about the best practice to implement the requirements and design rules for ductile details, particularly for connections in moment resisting frames (MRF), concentrically braced frames (CBF) and eccentrically braced frames (EBF), and for other structural components like diaphragms.

**Chapter 5** describes the guidance provided for design assisted by testing by EN 1990 and the specific rules for tests, a necessary tool for evaluating the performance characteristics of structural typologies and components in the plastic field and in cyclic/dynamic conditions.

**Chapter 6** illustrates and discusses the design steps and verifications required by EN 1998-1 for a multi-storey Moment Resisting Frame.

**Chapter 7 and 8** do the same respectively for buildings with CBF's and EBF's.

**Chapter 9** presents three very different examples of real buildings erected in high seismicity regions: one tall building, one industrial hall and one design using base isolation. These examples are complete in the sense that they show the total design, where seismic aspects are only one part of the problem. These examples are concrete, because they illustrate practical difficulties of the real world with materials, execution, positioning . . .

## MICROACTUATORS AND MICROMECHANISMS BOOK SERIES: MECHANISMS AND MACHINE SCIENCE, VOL.45

Lena ZENTNER, Burkhard CORVES, Brian JENSEN,  
Erwin-Christian LOVASZ

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### Short description of the context

This volume contains twenty-two contributions from researchers from ten countries, represented at the 4th Conference on Microactuators and Micromechanisms, which was held in 2016 in Ilmenau, Germany. The aim of the conference was to provide a special opportunity for a know-how exchange and collaboration in various disciplines concerning systems pertaining to micro-technology.

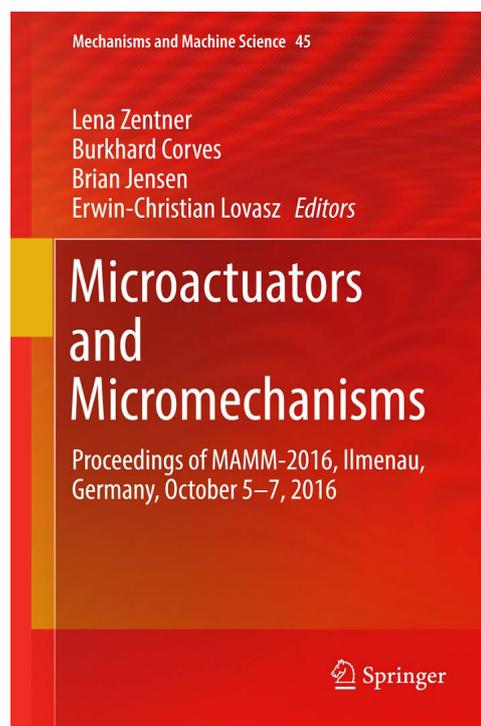
This Conference was organized under the patronage of IFToMM (International Federation for the Promotion of Mechanism and Machine Science).

### Purpose and Motivation of the book

This book brings together investigations which combine theoretical and experimental results related to such systems as capsule micromechanisms, active micro catheters, nanotube vascular stents, mechanisms for micromilling, different compliant mechanisms including grippers and compliant systems with actuators and sensors, microrobots based on vibrations, tactile sensors, tooth brackets, compliant valves, and space reflectors.

### Summary

1. Study on Polymer-Made 3DOF Spatial Parallel Manipulator
2. Miniaturization of Check Valves
3. A Biologically Inspired Sensor Mechanism for Amplification of Tactile Signals Based on Parametric Resonance
4. Towards the Development of Tactile Sensors for Determination of Static Friction Coefficient to Surfaces
5. Development and Investigation of Photoelastic Sensor for Torque Measurement
6. Flexural Body for a Wireless Force/Displacement Sensor
7. Capsule Micromechanism Driven by Impulse - Wireless Implementation
8. Development of Peristaltically Propelled Active Catheter Used in Radial Artery
9. Locomotion Principles for Microrobots Based on Vibrations
10. Exploration of Carbon-Filled Carbon Nanotube Vascular Stents



11. A Novel Gripper Based on a Compliant Multistable Tensegrity Mechanism
12. Selection of the Optimal Rigid-Body Counterpart Mechanism in the Compliant Mechanism Synthesis Procedure
13. Design and Experimental Characterization of a Flexure Hinge-Based Parallel Four-Bar Mechanism for Precision Guides
14. Dynamic Model of a Compliant 3PRS Parallel Mechanism for Micromilling
15. Dynamic Analysis of a Fatigue Test Bench for High Precision Flexure Hinges
16. Self-setting Locks for Petal Type Deployable Space Reflector
17. Monolithic and Statically Balanced Rotational Power Transmission Coupling for Parallel Axes
18. Investigation of the Novelty Brackets "Gold-S"
19. Dynamic Behavior of Active Lightweight Compliant Mechanisms with Integrated Piezoceramic Actuators by Under and Overcritical Periodic Excitation
20. Synthesis of Compliant Mechanisms with Defined Kinematics
21. A Concept of Adaptive Two Finger Gripper with Embedded Actuators
22. Implementation of Self Contact in Path Generating Compliant Mechanisms

## NEW ADVANCES IN MECHANISMS, MECHANICAL TRANSMISSIONS AND ROBOTICS BOOK SERIES: MECHANISMS AND MACHINE SCIENCE, VOL.46

Burkhard CORVES, Erwin-Christian LOVASZ, Mathias HÜSING, Inocentiu MANIU, Corina GRUESCU

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### Short description of the context

This volume presents the proceedings of the Joint International Conference of the XII International Conference on Mechanisms and Mechanical Transmissions (MTM) and the XXIII International Conference on Robotics (Robotics '16), that was held in Aachen, Germany, October 26th-27th, 2016. .

### Purpose and Motivation of the book

It contains applications of mechanisms and transmissions in several modern technical fields such as mechatronics, biomechanics, machines, micromachines, robotics and apparatus. In connection with these fields, the work combines the theoretical results with experimental testing. The book presents reviewed papers developed by researchers specialized in mechanisms analysis and synthesis, dynamics of mechanisms and machines, mechanical transmissions, biomechanics, precision mechanics, mechatronics, micromechanisms and microactuators, computational and experimental methods, CAD in mechanism and machine design, mechanical design of robot architecture, parallel robots, mobile robots, micro and nano robots, sensors and actuators in robotics, intelligent control systems, biomedical engineering, teleoperation, haptics, and virtual reality.



### Summary

- MTM - Mechanisms - Analysis and Synthesis
- MTM - Dynamics of Mechanisms and Machines
- MTM - Mechanical Transmissions
- MTM - Micromechanisms and Microactuators
- MTM - Computational and Experimental Methods
- MTM - Terminology
  
- Robotics - Mechanical Design of Robot Architecture
- Robotics - Mobile Robots
- Robotics - Parallel Robots
- Robotics - Sensors and Actuators in Robotics
- Robotics - Robotic Control Systems
- Robotics - Biomedical Engineering
- Robotics - Teleoperation, Haptics, Virtual Reality
- Robotics - Compliant Structures
- Robotics - Robotic Applications



