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Titolo	Applications + Practical Conceptualization + Mathematics = fruitful Innovation : Proceedings of the Forum of Mathematics for Industry 2014 / / edited by Robert S. Anderssen, Philip Broadbridge, Yasuhide Fukumoto, Kenji Kajiwara, Tsuyoshi Takagi, Evgeny Verbitskiy, Masato Wakayama
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Collana	Mathematics for Industry, , 2198-3518 ; ; 11
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Soggetti	Engineering mathematics Engineering - Data processing Mathematics Mathematical physics Mathematical and Computational Engineering Applications Applications of Mathematics Mathematical Methods in Physics
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	UTM-CIAM: Transformation and Beyond Malaysian Mathematics for Industry -- Group Theory Methods in Virology: Landau Density Wave Approach -- Applications of Nonlinear Programming to Packing Problems -- Introduction to Mathematical Origami and Origami Engineering -- An Interaction with Biologists: Insights into Development and Disease -- Modeling Biochemical Reaction Systems with Markov Chains -- Analytical Solutions of Basic Models in Quantum Optics -- Quantum Simulation of Spin Chains Coupled to Bosonic Modes with Superconducting Circuits -- Age Structures in Mathematical Models for Infectious Diseases, with a Case Study of Respiratory Syncytial Virus -- Mathematical Theory to Compute Stochastic Cellular Processes -- Mathematical Model of Epidermal Structure -- Beyond Adiabatic Elimination: Effective Hamiltonians and Singular Perturbation

-- The Formation and Launch of the Asia Pacific Consortium of Mathematics for Industry (APCMfI) -- Data Value Estimation for Privacy-Preserving Big/Personal Data Businesses -- Australian Space Research Program – Platform Technologies for Space, Atmosphere and Climate Project: Selected Innovations -- The Effect of Heaped and Sloped Powder Layers on Ejection Times and the Residence-Time Distribution of a Conical Mass-Flow Hopper -- Uniqueness and Stability for Double Crystals in the Plane -- Modeling and Control of Fiber Orientation in Papermaking Machines -- Recent Methods for Reconstructing Missing Data in Multispectral Satellite Imagery -- Sensitivity Analysis and Its Numerical Methods for Derivatives of Quadratic Eigenvalue Problems -- Risk Aggregation with Copula for Banking Industry -- Discrete Geometry for Reliable Surface Quad-Remeshing.

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#### Sommario/riassunto

This book is a collection of papers presented at the conference “Forum Math-for-Industry 2014” for which the unifying theme was “Applications + Practical Conceptualization + Mathematics = fruitful Innovation” in October 2014. This epigram encapsulates the dynamics of the process that takes an application through to an innovation. Industrial mathematics can be viewed as the causal engine that implements the epigram by taking an Application such as input and convolving it with a mixture of Practical Conceptualization and Mathematics to generate a fruitful Innovation as output. The book illustrates various aspects of the two-way interaction between applications and their association highlighting how practical conceptualization assists with the linking of the question that encapsulates the current application to the relevant mathematics. The contents of this volume address productive and successful interaction between industry and mathematicians, as well as the cross-fertilization and collaboration that result when mathematics is involved with the advancement of science and technology.

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