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Altri autori (Persone)	WiercigrochMarian RegaG (Giuseppe)
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Note generali	Includes indexes.
Nota di contenuto	I New Nonlinear Dynamics Methods and Theories: 1. Noise-induced jumping prior to a fold: Applied to climate tipping predictions, by J Michael Thompson -- 2. Computation of the basins of attraction in non-smooth dynamical systems, by Ugo Galvanetto -- 3. Two conceptions of nonlinear normal vibration modes and their applications in applied problems, by Yuri V Mikhlin -- 4. Soliton-mediated electric current or electron transfer arising from the coupling of electron quantum mechanics to nonlinear elasticity in anharmonic crystal lattices, by Manuel G Velarde -- 5. Dynamics of a ring of unidirectionally coupled Duffing oscillators, by Tomasz Kapitaniak -- 6. Real-time subspace tracking for condition monitoring and adaptive

control using Karhunen-Loève-transform, by Edwin Kreuzer -- 7. Nonlinear dynamics of parametric systems, by Richard Morrison -- 8. Buckling induced by plasticity and the vibrations of beams actuated by transverse external forces, by Pedro Ribeiro -- II Smooth Engineering Systems: 1. Motion of an oscillating two-link system in a fluid, by Felix L Chernousko -- 2. Design, fabrication and performance evaluation of a nonlinear quasi-zero stiffness vertical vibration isolator, by Pankaj Wahi -- 3. Mixed-Modal Self-Excited Oscillation of Fluid-Conveying Cantilevered Pipe with End Mass, by Kiyotaka Yamashita -- 4. Vortex induced vibrations of offshore risers, by Marko Keber -- 5. Importance of accurate physical modelling in the analysis of critical nonlinear ship rolling motion and capsizing, by Jeffrey Falzarano -- 6. Dynamical integrity for interpreting experimental data and ensuring safety in electrostatic MEMS, by Stefano Lenci -- 7. Synchronisation of pendula systems for energy extraction, by Anna Najdecka -- 8. A combined semi-analytic and experimental approach for multiphysical nonlinear MEM resonators, by Rob H B Fey -- 9. Vibration reduction using shape memory alloy, by Marcelo A Savi -- 10. Nonlinear dynamics and instability as important design concerns for a guyed mast, by Paulo B Gonçalves -- 11. Dynamics of cutting process of material used in aviation industry, by Rafal Rusinek -- 12. Dynamical integrity for interpreting experimental data and ensuring safety in electrostatic MEMS, by Laura Ruzziconi, Mohammad I. Younis, Stefano Lenci -- 13. Suppressing aeroelastic instability in a suspension bridge using a nonlinear absorber, by Vaurigaud B., Manevitch L.I., Lamarque C.-H. -- III Non-smooth Engineering Systems: 1. Cantilever dynamics with nonlinear tip interaction forces, by Bala Balachandran -- 2. Smaller and inexpensive power converters using nonlinear dynamics, by Damian Giaouris -- 3. Nonlinear dynamics and contact fracture mechanics of high frequency percussive drilling, by Olusegun Ajibose -- 4. Bit-bounce and stick-slip in drill-string dynamics, by K. Nandakumar, Marian Wiercigroch and Chris Pearson -- 5. Nonlinear dynamics of drill-string: Cosserat formulation, by Marcos Silveira. -- 6. Oscillations of a conductor in a magnetic field, by Ko-Choong Woo -- IV Nonlinear Control of Engineering Systems: 1. Control of intrinsic localized mode in coupled cantilever array, by Masayuki Kimura and Takashi Hikihara -- 2. Dynamic control and ground-based experiment of a tethered satellite system, by Haiyan Hu -- 3. Chaos control method applied to avoid bifurcations in pendulum dynamics, by Aline S de Paula -- 4. A study on swing up control for rotation of parametric pendulum, by Yuichi Yokoi -- 5. Nonlinear interactions in a nonideal MEMS gyroscope, by Jose Balthazar -- 6. Control of chains of mass points in a frictional environment, by Carsten Behn and Klaus Zimmermann.

## Sommario/riassunto

Nonlinear dynamics has been enjoying a vast development for nearly four decades resulting in a range of well established theory, with the potential to significantly enhance performance, effectiveness, reliability and safety of physical systems as well as offering novel technologies and designs. By critically appraising the state-of-the-art, it is now time to develop design criteria and technology for new generation products/processes operating on principles of nonlinear interaction and in the nonlinear regime, leading to more effective, sensitive, accurate, and durable methods than what is currently available. This new approach is expected to radically influence the design, control and exploitation paradigms, in a magnitude of contexts. With a strong emphasis on experimentally calibrated and validated models, contributions by top-level international experts will foster future directions for the development of engineering technologies and design using robust nonlinear dynamics modelling and analysis. .

