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Note generali	"This volume of Trends in Mathematics: Research Perspectives CRM Barcelona brings to your attention a selection of short papers based on the presentations that were given at the joint 8th International Workshop on MUlti-Rate Processes and GYSteresis (MURPHYS) and 3rs International Workshop on Hysteresis and Slow-Fast Systems (HSFS)."
Nota di contenuto	Optimisation of a Lead Sulphate Settling Process -- Localizing Limit Cycles: from Numeric to Analytical Results -- Odd Number Theorem for Equivariant Systems -- The Duhem Model and Hysteresis: A Symbiotic Relationship? -- A Model of Marine Bacteriophage Evolution -- Nonlinearization and Waves in Bounded Media: Old Wine in a New Bottle -- An Asymptotic Analysis of the Laminar-Turbulent Transition of Yield Stress Fluids in Pipes -- Fronts in Reaction-Diffusion-Advection Problems: Periodic Motion and Blow-Up -- Order Reduction of Kalman-Bucy Filter for Systems with Low Measurement Noise -- Order

Reduction for a Model of Bacteriophage Evolution -- A Model of Probabilistic Hysteretic Switching in Organizations -- Meshless Methods for `Gas - Evaporating Droplet' Flow Modelling -- Delayed Stability Loss Scenarios for a Slow Integral Manifold -- Critical Phenomena in a Dynamic Model of Electrocatalytic Reaction -- Thrice Critical Case in Singularly Perturbed Control Problems -- A Mathematical Model of Cancer Evolutionary Escape -- Asymptotic Solution for a Biped Walker Model -- The Generalized Poisson-Nernst-Planck System with Nonlinear Interface Conditions.

Sommario/riassunto	This volume contains extended abstracts outlining selected presentations given by participants of the joint international multidisciplinary workshop MURPHYS-HSFS-2016 (MUltiRate Processes and HYSteresis; Hysteresis and Slow-Fast Systems), which was dedicated to the mathematical theory and applications of multiple scale systems and systems with hysteresis, and held at the Centre de Recerca Matemàtica (CRM) in Barcelona from June 13th to 17th, 2016. The collection includes brief research articles on new results, preliminary work, open problems, and the outcomes of group work initiated during the workshop. The book addresses multiple scale phenomena, singular perturbations, phase transitions, and hysteresis phenomena occurring in mathematical, physical, economic, engineering and information systems. Its scope includes both new results in the theory of hysteresis, singularly perturbed systems and dynamical systems in general; and applications to the physical, chemical, biological, microbiological, economic, and engineering sciences, such as: elasto-plasticity and mechanical structures, damage processes, magnetic materials, photonics and optoelectronics, energy storage systems, hydrology, biology, semiconductor lasers, and shock phenomena in economic modeling. Given its breadth of coverage, the book offers a valuable resource for established researchers, as well as for PhD and postdoctoral students who want to learn more about the latest advances in these highly active research areas.