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Nota di contenuto	Part I: Research Paper - Interaction between oscillation and singular perturbations in a one-dimensional phase-field model (I. Zeppieri) -- Grain growth and the effect of different time scales (Epshteyn) -- Regularity of minimizers for a general class of constrained energies in two-dimensional domains with applications to liquid crystals (P. Bauman) -- On some models in radiation hydrodynamic Poro-visco-elasticity in biomechanics - optimal control (L. Bociu) -- Global gradient estimate for a divergence problem and its application to the homogenization of a magnetic suspension (Y. Gorb) -- On static and evolutionary homogenization in crystal plasticity for stratified

composites (E. Davoli) -- On the prescription of boundary conditions for nonlocal Poisson's and peridynamics models (D'Elia) -- Existence of global solutions for 2D fluid-elastic interaction with small data (M. Luckas) -- Doubly nonlocal Cahn-Hillard equations. Wellposedness and asymptotic behavior (P. Radu) -- 3D image based stochastic micro-structure modelling of foams for simulating elasticity (K. Schladitz) -- Machine learning for failure analysis: a mathematical modelling perspective (Pérez-Velázquez) -- Invertibility of Orlicz-Sobolev maps (B. Stroffolini) -- Global existence of solutions for the one-dimensional response of viscoelastic solids within the context of strain limiting theory (Y. engül) -- Generic for dissipative solids with bulk-interface interaction (M. Thomas) -- PART II: Review Papers - Phase separation in heterogeneous media (R. Venkataraman) -- Some recent results on 2d crystallization for sticky disc models and generalizations for systems of oriented particles (De Luca) -- Pattern formation for nematic liquid crystals-modelling, analysis, and applications (A. Majumdar) -- On applications of Herglotz-Nevanlinna functions in material sciences, I: classical theory and applications of sum rules (Yvonne Ou) -- On applications of Herglotz-Nevanlinna functions in material sciences, II: extended applications and generalized theory (Yvonne Ou) -- Rigidity and flexibility in the modelling of shape-memory alloys (A. Rüland). < p=""> .

Sommario/riassunto

This volume highlights contributions of women mathematicians in the study of complex materials and includes both original research papers and reviews. The featured topics and methods draw on the fields of Calculus of Variations, Partial Differential Equations, Functional Analysis, Differential Geometry and Topology, as well as Numerical Analysis and Mathematical Modelling. Areas of applications include foams, fluid-solid interactions, liquid crystals, shape-memory alloys, magnetic suspensions, failure in solids, plasticity, viscoelasticity, homogenization, crystallization, grain growth, and phase-field models.