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                      Adrian Muntean

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   Disciplina   531.0151

   Soggetti   Mathematical models
                      Measure theory
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                      Mechanics
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                      Mathematical Modeling and Industrial Mathematics
                      Measure and Integration
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                      Theoretical and Applied Mechanics

   Lingua di pubblicazione Inglese

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   Nota di contenuto 1 Scaling and Estimation of Physical Systems -- 2 Balance Equations in
                      Continuum Physics -- 3 Transport Fluxes.

   Sommario/riassunto This book develops continuum modeling skills and approaches the
                      topic from three sides: (1) derivation of global integral laws together
                      with the associated local differential equations, (2) design of
                      constitutive laws and (3) modeling boundary processes. The focus of
                      this presentation lies on many practical examples covering aspects
                      such as coupled flow, diffusion and reaction in porous media or
                      microwave heating of a pizza, as well as traffic issues in bacterial
                      colonies and energy harvesting from geothermal wells. The target
                      audience comprises primarily graduate students in pure and applied
                      mathematics as well as working practitioners in engineering who are
                      faced by nonstandard rheological topics like those typically arising in
                      the food industry.