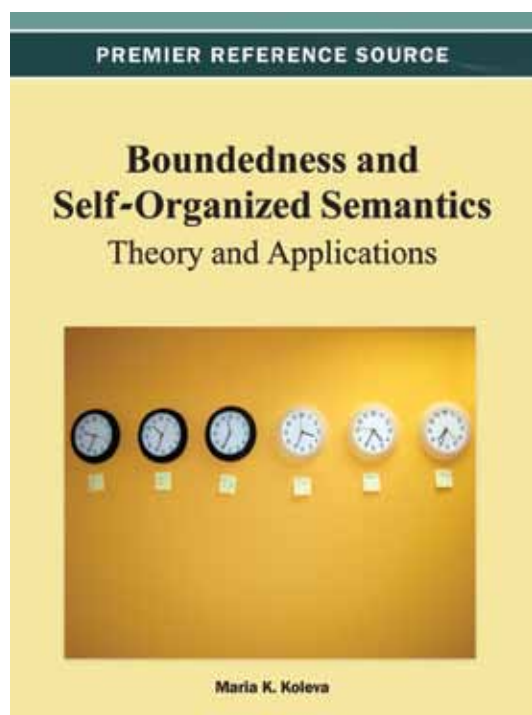


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Boundedness and Self-Organized Semantics: Theory and Applications



Maria K. Koleva

(Institute of Catalysis – Bulgarian Academy of Sciences, Bulgaria)

With the consideration of boundedness as a principle of organization rather than a law, its leading role is to apply a chain of command to the self-organization of matter, energy, and information. An exclusive property of this theory is the established way of sustaining the functionality of hierarchy through rules that are organized in a semantic-like approach.

Boundedness and Self-Organized Semantics: Theory and Applications enhances the understanding of the theoretical framework and leading principles of boundedness. Aiming to bridge the gap between biology, artificial intelligence, and physics, this book is an essential source for a wide audience including graduate students, researchers, and engineers interested in the advances of this interdisciplinary science.

Topics Covered:

- Boundedness
- Equation-Of-State
- Hierarchical Order
- Homeostasis
- Power Spectrum
- Properties of Self-Organized Semantics
- Semantics

ISBN: 9781466622029; © 2013; 233 pp.

Print: US \$175.00 | Perpetual: US \$265.00 | Print + Perpetual: US \$350.00

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Maria K. Koleva, Associate Professor in the Institute of Catalysis, Bulgarian Academy of Sciences, Sofia, Bulgaria since 2007. In the recent decade the main interest is focused on the systematic development of the theory of boundedness. The approach sets the leading role of the principle of boundedness for the hierarchical self-organization of matter, energy and information. The hypothesis of boundedness consists of 1) a mild assumption of boundedness on the local (spatial and temporal) accumulation of matter/energy at any level of matter organization and 2) boundedness of the rate of exchange of such an accumulation with the environment. Exclusive property of the proposed approach is the intelligent-like way of self-sustaining the functionality of the multi-layer hierarchy by means of governing the intra- and inter-level homeostasis through rules that are organized in semantic-like manner. The major results of the approach have been reported at a talk given at Niels Bohr Institute in 2009.

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Time Series Invariants under Boundedness:

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Sustainable Evolution in an Ever-Changing Environment

Chapter 9

Second Law Viewed as Ban over Perpetuum Mobile

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Is Semantic Physical?!

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