



## Beyond the Second Law [ Entropy Production and Non-equilibrium Systems /

Dewar, Roderick C,

ed. lit

Lineweaver, Charles H,

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Niven, Robert K,

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Regenauer-Lieb, Klaus,

ed. lit

Springer Berlin Heidelberg,

2014

Engineering

Complexity

Applications of Nonlinear Dynamics and Chaos

Theory

Monografía

The Second Law, a cornerstone of thermodynamics, governs the average direction of dissipative, non-equilibrium processes. But it says nothing about their actual rates or the probability of fluctuations about the average. This interdisciplinary book, written and peer-reviewed by international experts, presents recent advances in the search for new non-equilibrium principles beyond the Second Law, and their applications to a wide range of systems across physics, chemistry and biology. Beyond The Second Law brings together traditionally isolated areas of non-equilibrium research and highlights potentially fruitful connections between them, with entropy production playing the unifying role. Key theoretical concepts include the Maximum Entropy Production principle, the Fluctuation Theorem, and the Maximum Entropy method of statistical inference. Applications of these principles are illustrated in such diverse fields as climatology, cosmology, crystal growth morphology, Earth system science, environmental physics, evolutionary biology and technology, fluid turbulence, microbial biogeochemistry, plasma physics, and radiative transport, using a wide variety of analytical and experimental techniques. Beyond The Second Law will appeal to students and researchers wishing to gain an understanding of entropy production and its central place in the science of non-equilibrium systems - both in detail and in terms of the bigger picture

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**Título:** Beyond the Second Law [Recurso electrónico] Entropy Production and Non-equilibrium Systems edited by Roderick C. Dewar, Charles H. Lineweaver, Robert K. Niven, Klaus Regenauer-Lieb

**Editorial:** Berlin, Heidelberg Springer Berlin Heidelberg Imprint: Springer 2014

**Editorial:** Berlin, Heidelberg Springer Berlin Heidelberg 2014

**Descripción física:** XIV, 434 p. 99 il., 19 il. col

**Mención de serie:** Understanding Complex Systems

**Nota general:** Bibliographic Level Mode of Issuance: Monograph

**Contenido:** Introduction -- Theoretical perspectives on entropy production -- Applications to non-equilibrium systems

**Lengua:** English

**ISBN:** 9783642401541 9783642401558 9783642401534 9783662521083

**Materia:** Engineering Complexity. Applications of Nonlinear Dynamics and Chaos Theory.

**Autores:** Dewar, Roderick C, ed. lit Lineweaver, Charles H, ed. lit Niven, Robert K, ed. lit Regenauer-Lieb, Klaus, ed. lit

**Enlace a serie principal:** Understanding Complex Systems (CKB)1000000000365507 (DLC) (OCoLC) 1860-0840

**Enlace a formato físico adicional:** 3-642-40153-8

**Punto acceso adicional serie-Título:** Understanding Complex Systems

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## **Baratz Innovación Documental**

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es