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- Latest Additions

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- Home
- About the Archive
- Archive Policy
- History
- Help
- FAQ
- Journal Eprint Policies
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# Entropy - A Guide for the Perplexed

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## Abstract

Entropy is ubiquitous in physics, and it plays important roles in numerous other disciplines ranging from logic and statistics to biology and economics. However, a closer look reveals a complicated picture: entropy is defined differently in different contexts, and even within the same domain different notions of entropy are at work. Some of these are defined in terms of probabilities, others are not. The aim of this chapter is to arrive at an understanding of some of the most important notions of entropy and to clarify the relations between them, After setting the stage by introducing the thermodynamic entropy (Section 2), we discuss notions of entropy in information theory (Section 3), statistical mechanics (Section 4), dynamical systems theory (Section 5) and fractal geometry (Section 6).

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