318 Computing over the Reals: Foundations for Scientific Computing

Mark Braverman and Stephen Cook

The authors explain the "bit-model" of computability and complexity of real functions and subsets of real n-space and argue that this is a good way to formalize problems of scientific computation.

330 Find Me a Hash

Susan Landau

Hash functions are easy-to-compute compression functions that are used as compact representations, or digital fingerprints, of data and to provide message integrity. Some hash functions in current use have been shown to be vulnerable. The author argues that their replacements should be based on a mathematical theory, which has yet to be created.

334 Mushroom Billiards

Mason Porter and Steven Lansel

Mushroom billiards are examples of systems with mixed regular-chaotic dynamics whose relatively simple geometry makes their precise analysis possible. The authors analyze and illustrate a number of these problems.

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