Bocconi

Randomness

Speaker

Avi Wigderson
**Herbert H. Maass Professor
at the School of
Mathematics, Institute for
Advanced Study, Princeton**

Abstract

Is the universe inherently deterministic or probabilistic? Perhaps more importantly – can we tell the difference between the two? Humanity has pondered the meaning and utility of randomness for millennia. There is a remarkable variety of ways in which we utilize perfect coin tosses to our advantage: in statistics, cryptography, game theory, algorithms, gambling... Indeed, randomness seems indispensable!

Which of these applications survive if the universe had no randomness in it at all? Which of them survive if only poor-quality randomness is available., e.g. that arises from "unpredictable" phenomena like the weather or the stock market?

A computational theory of randomness developed in the past four decades, reveals (perhaps counter-intuitively) that very little is lost in such deterministic or weekly random worlds. In the talk I'll explain the main ideas and results of this theory.

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