

FriendsForum



Friends of the Institute for Advanced Study



Avi Wigderson

Herbert H. Maass
Professor
School of Mathematics

Wednesday
October 5, 2011
6:00 p.m.

Dilworth Room

Reservations requested
Please email friends@ias.edu
or call 609.734.8008

A wine and cheese reception
will precede the talk at 5:30

Randomness and Pseudo-randomness

Is the universe inherently deterministic or probabilistic? Perhaps more importantly, can we tell the difference between the two? We'll explore some of the remarkable variety of ways in which we utilize perfect coin tosses to our advantage (in statistics, cryptography, game theory, algorithms, gambling...) and then ask the following question. Which of these applications would survive if the universe had no randomness in it at all, and which of them would survive if only poor quality randomness (that arises from sampling "unpredictable" phenomena like the weather, the stock market, Geiger counters, etc.) is available.

A computational theory of pseudo-randomness, developed in the past three decades, reveals (perhaps counter-intuitively) that very little is lost in such deterministic or weakly random worlds, since what *seems* like perfect randomness can be created deterministically!

In this talk, Prof. Wigderson will explain the main ideas and results of this theory. No particular background will be assumed.

Avi Wigderson is a widely recognized authority in the diverse and evolving field of theoretical computer science. His main research area is computational complexity theory. This field studies the power and limits of efficient computation to solve natural (practical and theoretical) problems, and probes basic notions like learning, proof, privacy, and knowledge from a computational perspective.

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