Berlin Mathematical School

BMS Friday Colloquium

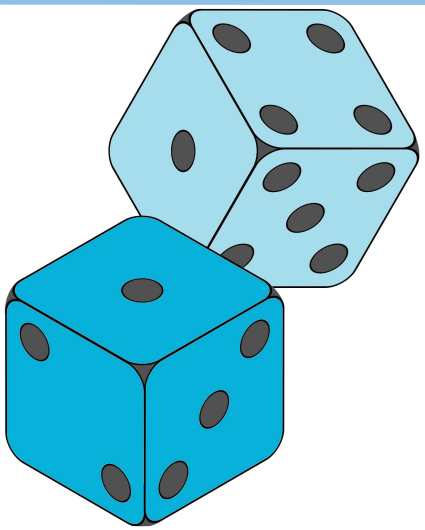
Friday 30 June 2017 at 14:15

Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Avi Wigderson

(IAS, Princeton)



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Randomness

Is the universe inherently deterministic or probabilistic? Perhaps more important - 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 which arises from "unpredictable" phenomena like the weather or the stock market?

A computational theory of randomness developed in the past three decades reveals (perhaps counter-intuitively) that very little is lost in such deterministic or weakly random worlds. In his talk, Wigderson will explain the main ideas and results of this theory.

Avi Wigderson is a professor at the Institute for Advanced Study (IAS) in Princeton. His research interests cover all aspects of the theory of computation. The Israeli mathematician and computer scientist got his PhD in 1983 from Princeton University. He joined the faculty of Hebrew University in 1986, and in 1999 he also accepted a position at the IAS, taking up full-time residence there in 2003. In 1994, Wigderson won the Nevanlinna Prize for his outstanding contributions in mathematical aspects of information sciences, and in 2013 he was elected to the National Academy of Sciences.

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