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Numbers: Are They Normal?

They say the only normal people are the ones you don't know very well. What about numbers? Which ones are normal, and how well do we know them? The notion of normality of a number is related to the occurrence of different digits in that number. Roughly speaking, a normal number is one in which every block of digits appears with the same limiting frequency. For example, $0.12345678910111213\dots$ is normal in base 10, but $0.1212121212\dots$ is not. The normality of numbers is connected to many areas of mathematics, like diophantine approximation, ergodic theory, geometric measure theory, analysis, and computer science. We will discuss some interesting facts about normal numbers and connect them to a few seemingly unrelated areas of mathematical sciences.

Malabika Pramanik



Malabika Pramanik is a professor of mathematics at the University of British Columbia (UBC) in Vancouver, Canada, and the scientific director of Banff International Research Station. An alumnus of the Indian Statistical Institute, she received her PhD from the University of California at Berkeley in 2001. Before joining UBC in 2006, Dr. Pramanik held positions at the universities of Wisconsin and Rochester and the California Institute of Technology. Dr. Pramanik's research interests cover harmonic analysis, geometric measure theory, and complex variables. She has received two UBC Killam awards, the Ruth E. Michler Memorial Prize, the prestigious Canadian Mathematical Society's Krieger-Nelson Prize for research excellence, among others. She is an advocate for equity, diversity, and inclusion in STEM fields.

1891

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