

**Featured
Keynote
Lecture**

**Dr. Bernard
Chazelle**

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The Challenges of Natural Algorithms

with Bernard Chazelle
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Princeton University, USA

Bernard Chazelle is Eugene Higgins Professor of Computer Science at Princeton University, where he has been on the faculty since 1986. His current research focuses on the “algorithmic nature” of living systems. A professor at the Collège de France in Paris in recent years as well as a member of the Institute for Advanced Study in Princeton, he received his Ph.D in computer science from Yale University in 1980. The author of the book, “The Discrepancy Method,” he is a fellow of the American Academy of Arts and Sciences, the European Academy of Sciences, and the recipients of three Best-Paper awards from SIAM.

This talk will sketch an algorithmic approach to the dynamics of living systems. Our working models consist of entropy-producing dissipative dynamic networks driven by a supply of free energy. They can be found in opinion dynamics, synchronization systems, as well as many evolutionary contexts. The main challenge posed by these natural algorithms is the dearth of analytical tools currently at our disposal. The focus of our work has been on building a new theory of endogenously-driven dynamic networks rich enough to allow for the renormalization of large-scale systems. The main novelty of our approach to dynamical systems is to make algorithms the centerpiece of the analysis.

