What *is* Time?

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Eric Mazur is the Balkanski Professor of Physics and Applied Physics at Harvard University and Member of the Faculty of Education at the Harvard Graduate School of Education. He served as Area Chair and Area Dean of Applied Physics at the Harvard John A. Paulson School of Engineering and Applied Sciences from 2010 until 2021 and Academic Dean from 2021 until 2024. Mazur is Chair of the Optica Foundation, a philanthropic organization supporting students and early-career professionals in the field of optics and photonics, and Past President of Optica (formerly the Optical Society).

Mazur is a prominent physicist known for his contributions in nanophotonics, an internationally recognized educational innovator, and a sought-after speaker. In education he is widely known for his work on Peer Instruction, an interactive teaching method aimed at engaging students in the classroom and beyond. In 2014 Mazur became the inaugural recipient of the Minerva Prize for Advancements in Higher Education. He has received many awards for his work in physics and in education, and has founded several successful companies. Mazur has widely published in peer-reviewed journals and holds numerous patents. He has also written extensively on education and is the author of Peer Instruction: A User's Manual (Prentice Hall, 1997), a book that explains how to teach large lecture classes interactively, and of the Principles and Practice of Physics (Pearson, 2015), a book that presents a groundbreaking new approach to teaching introductory calculus-based physics. Mazur is a leading speaker on optics and on education. His motivational lectures on interactive teaching, educational technology, and assessment have inspired people around the world to change their approach to teaching.

Time is one of our most familiar experiences — yet remains one of the deepest mysteries of the universe. As Augustine famously remarked, "If no one asks me, I know what it is. If I wish to explain it, I do not know." Across cultures, disciplines, and eras, time has been imagined as linear, cyclical, relative, and even illusory. It shapes our emotions, structures our lives, and defines our understanding of change and mortality.

In this keynote, we will explore the many facets of time — from its philosophical and psychological dimensions to its role in modern physics. We will then delve into humanity's attempts to "capture time" by measuring and manipulating events at extraordinarily short timescales. Drawing on recent advances in ultrafast laser science, we will journey across a logarithmic scale from femtoseconds to the age of the universe, offering a new perspective on time and motion at the speed of light.