MATH AWARENESS MONTH PUBLIC LECTURE

Einstein's Greatest Ideas

Hubert Bray, Professor of Mathematics, Duke University

Mathematics Awareness Month is held each year in April. Its goal is to increase public understanding of and appreciation for mathematics. To that end Cornell's Department of Mathematics sponsors an annual public lecture.

Abstract: Thousands of years ago, the Ancient Greek mathematician Pythagoras foresaw that geometry and mathematics would lay the foundation for understanding the universe. A little over a hundred years ago, Einstein revolutionized our view of space and time by inserting a minus sign into the Rule of Pythagoras, thereby defining Special Relativity and a new notion called spacetime. Einstein's next insight was General Relativity, summarized by three words with the deepest scientific meaning of any three words in the English language: ``Matter Curves Spacetime.'' This beautifully geometric idea explains gravity as accurately as can be measured today, unlike Newtonian gravity which was inconsistent with observations of the orbit of Mercury as far back as 1859. This genius idea also predicts the Big Bang, black holes, and gravitational waves, phenomena now verified by observations, and yet so outrageous that even Einstein initially doubted their existence. Finally, the work of Schoen and Yau from 1979 is the reason that, when you jump up, you come down, according to the Positive Mass Theorem, which rigorously proves that General Relativity prohibits the Earth and other isolated gravitational systems from having negative gravity. We'll explain these key ideas in the history of mathematics and science with pictures, stories, and the most famous equations, appropriate for kids and adults of all ages.

Wednesday, April 26, 2023 at 4:30 PM
Malott Hall, Rm. 253 (312 Tower Rd., Cornell University)

Parking information and directions: www.cornell.edu/maps
Refreshments will be served at 4:00 PM in the Mathematics Department lounge (532 Malott Hall)

For accommodations please contact Heather Peterson, hko1@cornell.edu