## PORCELLI LECTURE

# Robert Bryant

## Phillip Griffiths Professor • Duke University

**President of the American Mathematical Society 2015–2017**
**Member of the National Academy of Sciences**

## March 28, 2019 • 4:00pm–5:00pm • 130 Nicholson Hall

Image credit: Sascha Grusche

# Mathematical Mysteries of the Ellipse

## Abstract

After lines and circles, the simplest curves are the so-called conic sections, hyperbolas, parabolas, and ellipses. Not only are they the next simplest curves, but they have many applications in the physical world and have been studied for more than two thousand years. However, these curves have many surprising properties that were not discovered until fairly recently.

For example, it has been known for a long time that light emitted from one focus of an ellipse collects at the other focus, and a similar property for the parabola is used in designing headlights. However, this turns out to be a special case of a much more interesting and surprising special property discovered in the 19th century and that has given rise to problems that we still don't know how to solve today.

In this talk, which will use nothing beyond high school algebra (and lots of pictures), I'll explain some of these mysteries and why we study them.

The lecture will be accessible to a **general audience**, including **high school** students.
Seating is limited, so **RSVP** to Ms. Soula O'Bannon at **soula@math.lsu.edu** or **225.578.1617**.