MATH/STAT COLLOQUIUM

A journey through the calculus of variations

In this talk, we will discuss several classical problems from which the discipline known as "Calculus of Variations" originates. In the Calculus of Variations many problems involve finding a function that maximizes or minimizes an integral expression. One example is finding the curve giving the shortest distance between two points — a straight line, of course, in Cartesian geometry, but less obvious if the two points lie on a curved surface. While we will start our journey more than three centuries back in time, we will eventually touch upon some new and important research areas connected to so-called "free boundary problems". Such problems arise in various mathematical models encompassing applications that range from physical to economical, financial, and biological phenomena. Simple examples are the melting of ice to water, or the transition from buying to selling assets.

Daniela De Silva
Barnard College
Columbia University

Monday, March 27
4:15pm Refreshments; 4:30pm Lecture
Science Center 199