

Math Coffee

Parabola or Catenary?

Dr. James Peirce

The St. Louis Arch and the Golden Gate Bridge in San Francisco are two popular tourist attractions. The shape of the arch and the shape of the support line of the suspension bridge look to be similar (at least after you rotate one 180 degrees). However, the shapes are not the same. The arch in St. Louis, the cable in power lines, and a hanging chain supported at both ends are described by a different mathematical curve than a suspension bridge. You may think that this shape is a parabola. Indeed, Galileo claimed that the curve of a chain hanging under gravity should be a parabola. In 1669, his claim was proved to be wrong. In this talk, I will discuss why Galileo was incorrect. I will derive and solve the differential equation for the shape of catenary. A catenary is the curve a hanging flexible wire or chain assumes when supported at its ends and acted upon by a uniform gravitational force.

**Thursday, March 3rd
at 4:15 pm in 151 Cowley**

***Cookies and coffee in 102 Cowley at 4:00**