

The Colorado State University Computer Science Department and ISTeC present:

# Impossible, Unbelievable .. but True Results of Mathematics and Physics

**Stan Wagon**

Macalester College

Monday, February 23, 2009, 11:00, Computer Science Building 130

Reception at 10:30

## **Abstract**

Math and physics are full of surprising results, both concrete and abstract. Modern computing tools, especially *Mathematica*, allow us to visualize and confirm many surprising things. In this talk I will give a sampling of several that have made a strong impression on me, mostly from math, but some from physics. Here is a sampling:

- A drill that can be driven in a standard drill press and cut out an exact square hole.
- A bicycle with square wheels that one can ride perfectly smoothly.
- A hoop is rolled along the ground. At some point it spontaneously jumps into the air.
- The Banach-Tarski Paradox: A ball can be decomposed into pieces and rearranged into two balls of the same size.
- A non-straight unicycle track that a bike can follow.
- How playing two losing games in a certain combination leads to a winning game.
- A cake puzzle that is easy for anyone to understand, but which causes professional mathematicians almost always to give the wrong answer with complete confidence.

## **Biography**

Stan Wagon, professor of mathematics at Macalester College, grew up in Montreal and obtained his PhD at Dartmouth College. His current mathematical interest is the use of computing to bring abstract concepts to life. He has written 11 books and 100 papers, and has appeared in *Ripley's Believe It Or Not* for his construction of a working square-wheeled bicycle. He has won several prizes for writing and shared the first-place prize in the SIAM 100-Digit Challenge. Other interests include ultramarathoning (founding editor of *Ultrarunning Magazine*), ski mountaineering (led a group attempting a ski ascent of Mount Logan, Canada's highest peak at 19500 feet), nordic ski racing (completed a 100-mile race), and competitive snow sculpture, where his team uses geometrical themes and has won three silver medals in international competition.