



The Math Colloquium
Department of Mathematics
San José State University



Robert McCann

Univ. of Toronto (visiting MSRI)

Monge and Kantorovich meet Einstein

OCTOBER 30, 2013, MH320

Abstract: We discuss a surprising connection between Monge's (1781) problem of optimal transportation, and Einstein's (1915) theory of gravity. Monge (and Kantorovich in 1942) asked: Given a distribution of production and consumption, and cost per unit mass transported from x to y , which producers should supply which consumers to minimize total transportation expenses? Einstein asked: How can failings of the Newtonian worldview be resolved by recasting gravity as a purely geometrical theory, asserting that matter and its effects can be understood as curvatures in the fabric of space-time? The same notions of curvature arise unexpectedly in both problems, and for essentially the same reason: independence of the phenomena on the coordinates used to describe it.

Background: Exposure to calculus, ideally in several variables. No physics will be assumed.

About the speaker: Robert McCann is a leading researcher in the area of optimal transportation and its applications. Currently on sabbatical from the University of Toronto, in Fall 2013 he is the Eisenbud Professor at the Mathematical Sciences Research Institute in Berkeley.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3 PM

For more information, see our full schedule at:

<http://www.math.sjsu.edu/~hsu/colloq/>