



Pacific Institute for the
Mathematical Sciences

PIMS Distinguished Speakers Series

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Title: A symmetric Monge-Kantorovich theory and applications

Given a probability measure μ on a domain $\Omega \subset \mathbb{R}^d$, we consider the symmetric version of the Monge-Kantorovich theorem on the product space Ω^N , where the cost function c is symmetric and all the prescribed marginals are equal to μ . We show that the supremum is attained on a probability measure that is supported on the graph of functions of the form $x \rightarrow (x, Sx, S^2x, \dots, S^{N-1}x)$, where S is a μ -measure preserving transformation on Ω such that $S^N = I$ a.e. The result applies in particular to the case where c is given by the Newtonian potential associated to N electrons. It then yields the existence of “co-motion” functions that correspond to an interacting energy functional for “strictly correlated electrons”. In another application, the result yields that for any integer N , essentially any non-degenerate vector field from Ω into \mathbb{R}^d is N -cyclically monotone up to a measure preserving N -involution. This is joint work with Abbas Moameni.

Friday—February 8, 2013

12:00 to 1:00 p.m.—presentation

1:00 to 1:50 p.m.—reception

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