Department of Mathematics
The Chinese University of Hong Kong

數學系
香港中文大學

Seminar

Multi- to one-dimensional matching

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Abstract: The stable marriage problem with transferable utility is well-known to be equivalent to a Monge-Kantorovich optimal transportation problem. Motivated by the possibility that the husbands (but not the wives) can be described by a single variable, we consider the problem of transporting a probability density on R^m to another on the line, so as to optimize a given cost function. We introduce a nestedness criterion relating the cost to the densities, under which it becomes possible to solve this problem uniquely, by constructing an optimal map one level set at a time. This map is continuous if the target density has connected support. We use level-set dynamics to develop a local regularity theory for this map and the Kantorovich potentials solving the dual linear program. We identify obstructions to global regularity through examples.

This represents joint work with Pierre-Andre Chiappori and Brendan Pass.

Date: 22 March 2016 (Tuesday)
Venue: Rm 222, Lady Shaw Building,
            The Chinese University of Hong Kong, Shatin
Time: 4:30 p.m. – 5:30 p.m.

All are Welcome!