

Multi- to one- dimensional transportation

Brendan Pass^{*}

pass@ualberta.ca

I will discuss *joint work with Pierre-Andre Chiappori and Robert McCann* on the Monge-Kantorovich problem of transporting a probability measure on \mathbb{R}^n to another on the real line. We introduce a nestedness criterion relating the cost to the marginals, under which it is possible to solve this problem uniquely (and essentially explicitly), by constructing an optimal map one level set at a time. I plan to discuss examples for which the nestedness condition holds, as well as some for which it fails; some of these examples arise from a matching problem in economics which originally motivated our work. If time permits, I will also briefly discuss how level set dynamics can be used to develop a local regularity theory in the nested case.

^{*}Department of Mathematical and Statistical Sciences, University of Alberta, 571 Central Academic Bldg, Edmonton, AB T6G 2G1, CANADA