
BRENDAN PASS, University of Alberta
Multi - to one - dimensional transportation

I will discuss joint work with Pierre-Andre Chiappori and Robert McCann on the Monge-Kantorovich problem of transporting a probability measure on \mathbf{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.