Statistical Sciences
UNIVERSITY OF TORONTO

SEMINAR SERIES

When:	**Thursday, November 2, 2017**
Time:	**3:30 – 4:30 pm**
	Refreshments at 3:15 pm
Where:	**Sidney Smith Hall Rm 1069**
Speaker:	**MICHAEL BETANCOURT, Columbia University**
Host:	**Daniel Simpson**

Adiabatic Monte Carlo

Using local information to guide the exploration of a given target distribution, Markov Chain Monte Carlo, in particular Hamiltonian Monte Carlo, is a cornerstone of modern statistical computation. Unfortunately this local information is not sufficient for computations that require global knowledge of the target distribution, such as estimating expectations with respect to multimodal distributions or estimating the marginal likelihood of a Bayesian posterior. When coupled with an interpolation between the target distribution and a simpler auxiliary distribution, however, Markov Chain Monte Carlo can be an important component in thermodynamic algorithms like simulated annealing, simulated tempering, and their variants. Unfortunately, determining an effective interpolation is a challenging tuning problem that hampers these methods in practice.

In this talk I will show how the same differential geometry from which Hamiltonian Monte Carlo is built can also be used to construct an optimal interpolation dynamically, with no user intervention. I will then present the resulting Adiabatic Monte Carlo algorithm with discussion of its promise and some of the open problems in its general implementation.