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SPEAKER TITLES/ABSTRACT

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“Inference Meets Computation: Dynamical, Stochastic and Economic Perspectives”

Statisticians have generally been content to leave considerations of computation out of discussions of the foundations of inference. Although the roots of the two dominant paradigms of statistical computation---optimization and MCMC sampling---were in the mix in foundational discussions in the 1950s, the mathematical study of these topics diverged and accordingly failed to provide a forcing function to bring warring statisticians to the same table. Indeed, in the ensuing years, when implementing their principles computationally, frequentists have mostly been able to focus on optimization and Bayesians on MCMC, and the resulting implementations do not hint at any deeper inferential unity. I wish to complicate matters by developing some new mathematical links between optimization and sampling. These links appear most readily when one works in continuous time, as variational characterizations of certain classes of ODEs and SDEs, and they are most striking in the setting of nonconvex geometry.