1141-35-156 **Ryan W Murray*** (rwm22@psu.edu). *Accelerating Stein variational gradient descent.*

Recently machine learning researchers have proposed an algorithm called *Stein variational gradient descent* in order to accurately approximate Bayesian posterior probabilities. The proposed algorithm may be seen as a particle approximation of the non-linear evolution equation

$$\partial_t \rho = \nabla \cdot (\rho(\nabla K * \rho + K * (\nabla V \rho))), \quad \rho(0, x) = \rho_0(x), \tag{1}$$

where the posterior distribution of interest is e^{-V}, K is a positive definite kernel and ρ_0 is initial data. This equation may be seen as a gradient flow of the relative entropy function in an appropriately modified Wasserstein space. This talk will discuss some recent work regarding convergence rates of this equation. Numerical results demonstrating the effectiveness of the method will also be presented. (Received July 26, 2018)