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Qi He*, 425 Rowland Hall, Irvine, CA 92697, and **Jack Xin**. *Hybrid Deterministic-Stochastic Gradient Langevin Dynamics for Bayesian Learning*.

In this paper, we propose a new algorithm to obtain Bayesian posterior distribution by a hybrid deterministic-stochastic gradient Langevin dynamics. To speed up convergence, it is common to use stochastic gradient method to approximate the gradient by sampling a subset of the large dataset. Stochastic gradient methods make progress fast initially, however, it is often slow as the iterations approach the desired solution. In contrast, full gradient methods converge at the expense of evaluating the full gradient at each iteration. To overcome the disadvantages of these two methods, we develop a hybrid method that has the advantages of both approaches for Bayesian posterior distribution. We present mathematical proof for the convergence of our algorithm, and show its fast convergences by numerical simulations. (Received August 04, 2014)