1095-62-117   **Yaming Yu*** (`yamingy@uci.edu`) and **Xiao-Li Meng**. *Accelerating MCMC by interweaving multiple parameterizations.*

Reparameterization is known to drastically improve the efficiency of some MCMC algorithms. Building on the idea of reparameterization, a variety of methods have evolved, including conditional augmentation, marginal augmentation, parameter-expanded data augmentation, partially non-centering parameterization, sandwiched algorithms, and interweaving strategies. Here we demonstrate that by interweaving two specific kinds of parameterizations, the sufficient and ancillary augmentations, we can gain considerable speed in convergence while maintaining simplicity in construction. We also discuss how the various methods can be viewed from the perspective of regression residuals, and how the orthogonality between regression functions and residuals helps reduce the dependence among MCMC draws. We present both theoretical results and empirical illustrations involving simulations and real data. (Received September 04, 2013)