

# Adaptive Optimal Scaling of Metropolis-Hastings Algorithms

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We present an adaptive method for the automatic scaling of Random-Walk Metropolis-Hastings algorithms. Our method relies on the use of the Robbins-Monro search process, whose performance is determined by an unknown steplength constant. We give a very simple estimator of this constant for proposal distributions that are univariate or multivariate normal, together with detail for automating the algorithm. The effectiveness of the algorithm is demonstrated with both simulated and real data examples. The algorithm is a quick robust method for finding the scaling factor that yields a specified acceptance probability.