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**Galin Jones\*** ([galin@stat.umn.edu](mailto:galin@stat.umn.edu)), 224 Church St S.E., Minneapolis, MN 55445. *Evaluation of Formal posterior distributions via Markov chain arguments.*

We consider evaluation of proper posterior distributions obtained from improper prior distributions. Our context is estimating a bounded function  $\phi$  of a parameter when the loss is quadratic. If the posterior mean of  $\phi$  is admissible for all bounded  $\phi$ , the posterior is strongly admissible. We give sufficient conditions for strong admissibility. These conditions involve the recurrence of a Markov chain associated with the estimation problem. We develop general sufficient conditions for recurrence of general state space Markov chains that are also of independent interest. Our main example concerns the  $p$ -dimensional multivariate normal distribution with mean vector  $\theta$  when the prior distribution has the form  $g(\|\theta\|^2)d\theta$  on the parameter space  $\mathbb{R}^p$ . Conditions on  $g$  for strong admissibility of the posterior are provided. (Received September 21, 2009)