1127-60-9   **Martial Longla*** (`mlongla@olemiss.edu`). *Remarks on limit theorems for reversible Markov processes and their linear functions.*

We propose some backward-forward martingale decompositions for functions of reversible Markov chains. These decompositions are used to prove the functional Central limit theorem for reversible Markov chains with asymptotically linear variance of partial sums. We also provide a proof of the equivalence between asymptotic linearity of the variance and convergence of the integral of $1/(1-t)$ with respect to the associated spectral measure ρ. We show a result on uniform integrability of the supremum of the average sum of squares of martingale differences. We also study the asymptotic behavior of linear processes having as innovations mean zero square integrable functions of stationary reversible Markov chains. We include in our study the long range dependence case. We apply this study to several cases of reversible stationary Markov chains that arise in regression estimation. (Received September 16, 2016)