1014-42-741 **David Jimenez** and **Long Wang*** (lwang@spsu.edu), Department of Mathematics, Southern Polytechnic State University, 1100 South Marietta Parkway, Marietta, GA 30060, and **Yang Wang**. *PCM Quantization Errors and The White Noise Hypothesis.*

The White Noise Hypothesis (WNH), introduced by Bennett half century ago, assumes that in the pulse code modulation (PCM) quantization scheme the errors in individual channels behave like white noise, i.e. they are independent and identically distributed random variables. The WNH is key to estimating the means square quantization error (MSE). But is the WNH valid? In this paper we take a close look at the WNH. We show that in a redundant system the errors from individual channels can never be independent. Thus to an extent the WNH is invalid. Our numerical experients also indicate that with coarse quantization the WNH is far from being valid. However, as the main result of this paper we show that with fine quantizations the WNH is essentially valid, in which the errors from individual channels become asymptotically *pairwise* independent, each uniformly distributed in $[-\Delta/2, \Delta/2)$, where Δ denotes the step size of the quantization. (Received September 23, 2005)