1128-60-240 **Ellie Bayat*** (elham.bayatmokhtari@umconnect.umt.edu), Department of Mathematical Sciences, University of Montana, 32 Campus Drive, Missoula, MT 59812-0864, and **Emily F. Stone**. *GABAergic Synaptic Mechanisms in Information Transmission.*

I review some of the techniques of information theory and how they relate to neuroscience in quantitative manner. Furthermore, I use a mathematical model fitted to experimental data recorded from synaptically connected pairs of neurons in mouse hippocampal. Next, I quantify the information contained in the amplitude of the postsynaptic response induced by Poisson spike trains about the preceding interspike intervals in both deterministic and stochastic models of GABAergic synapses. While the stochastic model takes into account the variability introduced by probabilistic nature of vesicle release, the deterministic synapse model imposes a linear filter. This additional variability plays an important role in reducing over all information transmission compared to the deterministic model. Also, I measure the information transmission efficiency of this synapse using extitinformation efficacy, defined as the fraction of the information within total entropy of responses. Using information efficacy measure, it is found that the probabilistic effect is not uniform over all frequencies. It has the greatest effect in reducing information transmission at very low and very high frequencies, while this effect is negligible at the optimal frequency. (Received February 28, 2017)