1067-60-722   **Maria Teresa Giraudo*** (`mariateresa.giraudo@unito.it`), Dept. of Mathematics University of Torino, Via Carlo Alberto 10, 10123 Torino, Italy, and **Laura Sacerdote**, **Roberta Sirovich** and **Cristina Zucca**. *Estimation of information measures in coupled diffusion neuronal models.*

The study of information transmission between neurons plays a relevant role in neuroscience. The interspike times (ISI) are recognized as the random variables coding the information elaborated by a neuron connected to a surrounding network. However many problems are still open for the understanding of the statistical dependence properties of ISI's for neurons in a specific network. Various methods have been proposed in the framework of Information theory. The quantification of the amount of information contained in the activity of two or more connected neurons allows to extract the statistical features of spike trains and to characterize dependencies in their behaviour. Estimation of the mutual information between ISI's may be a useful tool in this framework. We compute here the mutual information of coupled model neurons whose interaction is determined by the firing times. The mutual information between the random variable describing the spiking times of the neurons is estimated employing the copula function describing the dependence between the spiking distributions. This allows to underline how the use of copulae enables to recognize directly the contribution due strictly to the coupling structure subject on the variations in the parameters characterizing the models. (Received September 14, 2010)