



## Séminaire ISIR

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**Mercredi 17 Juillet 2013 à 14h00**

Campus Jussieu, 4 place Jussieu, Paris  
Salle de réunion H20

### **Titre : Neural variability in premotor cortex is modulated by trial history and influences motor decision**

In the study of decision making emphasis is placed on different forms of perceptual integration, while the influence of memory in this integration process is poorly investigated. Here we studied the activity of neurons in the dorsal premotor area of two macaque monkeys performing a countermanding arm task. We observed that, when sorting data by trial history, the mean and variance of the reaction time could be accurately predicted from the across-trial neural variability. These results suggest the existence of a signal external to the decision making process that monitors the recent experience during the task. To validate this, we performed a test with a theoretical model of binary decision-making using a trial's history monitoring signal as an additional input to the network. We observed that changes in the strength of this signal directly caused changes in behavior and variability of the across-trial response while the mean firing rate did not exhibit significant variation. Our study confirms that, in the context of the countermanding task, the evidence provided by perception and memory is conveyed through different neuronal signals, mean rate and variance respectively.

Sous la co-tutelle de