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Talk Title:
Computation noise in human learning and decision-making: origin, impact, function

Abstract:
Making sense of uncertain and volatile environments, a cognitive process modeled across domains as statistical inference, constitutes a difficult yet ubiquitous challenge for human intelligence. Beside sensory errors and exploratory choices, recent research has identified the limited computational precision of inference itself as a surprisingly large contributor to the variability and suboptimality of perceptual and reward-guided decisions made under uncertainty. In this talk, I will present and discuss the theoretical and experimental evidence obtained by my group which, taken together, provides key insights into the origin, impact and function of this computation noise for human learning and decision-making. Moving beyond the classical description of internal noise as a performance-limiting constraint on neural function and cognition, I will provide preliminary data that delineates the possible emergent benefits of computation noise for adaptive behavior in a range of uncertain conditions.

Biographical Information:
Valentin Wyart is a research director at the Cognitive Computational Neuroscience Laboratory of the Ecole Normale Supérieure in Paris, France. His research group studies human learning and decision-making under uncertainty, with a particular focus on the sources of cognitive variability within and between individuals. The research carried out in his group typically combines behavioral modeling with multimodal functional neuroimaging to identify the cognitive processes that give rise to complex behavior.