



MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2022-2023

(internship from January to June 2023)

Host laboratory: Lyon Neuroscience Research Center (CRNL); Hospital Center Le Vinatier, Bat 462

Host team: Computation, Cognition and Neurophysiology team (Cophy); <https://www.crnlf.fr/fr/equipe/cophy>

Internship supervisors: KÖSEM Anne; Researcher (CR); kosem.anne@gmail.com

Project title: How the temporal variability of a sensory context affects auditory perception?

Project summary:

Keywords: Cognition, temporal prediction, auditory perception

In our everyday life, predicting the timing of incoming sensory events is very helpful to optimize perception and action. For example, a musician needs to infer the correct timing of each musical note in order to play in sync with the rest of the band. To do this, temporal predictions can be based on preceding temporal context (like the beat of the music that has just been played). Temporal predictive mechanisms are known to influence perception when stimulation is periodic. However, natural environments rarely contain exclusively periodic stimuli: for example, language and music are sensory stimuli that have complex temporal regularities that can be used to form temporal expectations. Our recent work (paper in process of publication) suggest that probabilistic contexts can also generate temporal predictions that influence auditory perception. This M2 project aims to extend and try to replicate these behavioral results, with temporal conditions close to natural speech. The master student will design the task, recruit participants, conduct the experiment and analyze data.

3-5 recent publications:

1. Morillon, B., Schroeder, C. E., Wyart, V., & Arnal, L. H. (2016). Temporal Prediction in lieu of Periodic Stimulation. *Journal of Neuroscience*, *36*(8), 2342–2347. <https://doi.org/10.1523/JNEUROSCI.0836-15.2016>
2. Breska, A., & Deouell, L. Y. (2017). Neural mechanisms of rhythm-based temporal prediction: Delta phase-locking reflects temporal predictability but not rhythmic entrainment. *PLOS Biology*, *15*(2), e2001665. <https://doi.org/10.1371/journal.pbio.2001665>
3. Herbst, S. K., & Obleser, J. (2017). Implicit variations of temporal predictability: Shaping the neural oscillatory and behavioural response. *Neuropsychologia*, *101*, 141-152.

Please send your proposal to marion.richard@univ-lyon1.fr for publication on the Master of Neuroscience website.