香港中文大學 CUHK
語言學及現代語言系 Department of Linguistics and Modern Languages

The Neural Basis of Speech and Music Rhythms

Prof. Nai DING
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Date: February 24, 2026 (Tuesday)
Time: 4:30 p.m. - 6:15 p.m. (Hong Kong Time, UTC +8)
Venue: Lai Chan Pui Ngong Lecture Theatre , Y.C. Liang Hall, The Chinese University of Hong Kong



Abstract

Rhythm is a fundamental feature of both speech and music. This talk explores the constraints that the human vocal system imposes on rhythmic structure and examines how rhythm is encoded in the auditory system. First, I will present convergent evidence from developmental studies, analyses of innate vocalizations, and systems-theoretic models, demonstrating that speech and music utilize distinct intrinsic temporal scales of the vocal apparatus. Second, I will discuss neural mechanisms for encoding temporal intervals in speech and sound sequences with distinct time interval distributions. A series of MEG experiments show that time interval encoding follows an efficient coding principle that maximizes mutual information between sound stimuli and neural responses.

Speaker

Nai Ding is a Research Professor in the College of Biomedical Engineering and Instrument Sciences at Zhejiang University and Deputy Director of the Key Laboratory for Biomedical Engineering of the Ministry of Education. His research investigates the neurocognitive mechanisms of speech and language processing, specializing in the neural encoding of rhythm and sequence structure. He has published over 50 papers in leading journals such as *Nature Neuroscience* and *Nature Human Behaviour*. He currently serves as Editor-in-Chief of the *Journal of Neurolinguistics* and is a member of the Board of Directors for the *Society for the Neurobiology of Language* (SNL). In 2023, he received the APAN Young Investigator Award.

All Are Welcome

Enquiries
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