

The principles of information processing in the mammalian auditory system are still largely a mystery. While neurons in the early auditory stations are well characterized and accurately modeled, the transformations of these signals along the processing pathway is not well understood, and so are the representation of acoustic signals in higher station such as the auditory cortex. What are the stimulus aspects that auditory neurons care about? and how do they code them?

In this talk I will show how information theoretic measures are applied to characterize the language neurons use to transmit information about the complex acoustic world: How information bearing elements in neural activity can be quantitatively identified. What they reveal about stimuli transformations along the auditory pathway and what computational principles these changes reflect. I'll discuss few of the technical difficulties in applying IT driven analysis to this domain, together with the challenges and prospects of the approach.