

ACOUSTICS2008/914
Role of temporal fine structure in speech perception

Fan-Gang Zeng

University of California Irvine, 364 Med Surge II, Irvine, CA 92697, USA

Recent studies have shown that lack of access to the temporal fine structure cue is a major reason for the difficulty in speech perception in noise by hearing-impaired listeners. To further understand the role of temporal fine structure, we need to define the temporal fine structure and to delineate its relationship to the temporal envelope in both acoustical and perceptual domains. This talk will first examine the relationship between temporal envelope and temporal fine structure in signal processing terms and then relate it to speech production and perception. Acoustically, the temporal fine structure primarily contributes to changes in fundamental frequency, harmonics, and formant transition. Perceptually, while the temporal fine structure can contribute to speech intelligibility via the formant transition cue, it contributes to speech perception in noise by enhancing auditory objection formation rather than increasing speech intelligibility directly.