

Quatieri, T.F. and McAulay, R.J. **Phase coherence in speech reconstruction for enhancement and coding applications** Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing, Glasgow, Scotland, May 1989.

Abstract

It has been shown that an analysis-synthesis system based on a sinusoidal representation leads to synthetic speech that is essentially perceptually indistinguishable from the original. A change in speech quality has been observed, however, when the phase relation among sine waves is altered. This occurs in practice when sine waves are processed for speech enhancement (e.g., time-scale modification and peak/rms reduction) and for speech coding. This paper introduces new techniques for obtaining different levels of phase coherence in sinusoidally-processed speech for preserving speech quality. These techniques are founded on a zero-phase sinusoidal analysis-synthesis system which generates natural-sounding speech without the requirement of vocal tract phase. This method provides a basis for improving sound quality by way of phase coherence in speech reconstruction for time-scale modification, a baseline system for coding, and dispersion for peak/rms reduction.