
**Abstract**

A new approach is introduced for time-scale modification of short-duration complex acoustic signals to improve their audibility. The technique constrains the modified signal to take on a specified spectral characteristic while imposing a time-scaled version of the original temporal envelope. Both full-band and sub-band representations of the temporal envelope are considered. In the full-band case, the modified signal is obtained by appropriate selection of its Fourier transform phase. In the sub-band case, using locations of maxima in the sub-band temporal envelopes, the phase of each bandpass signal is formed to preserve "events" in the envelope of the composite signal. The approach is applied to synthetic and actual short-duration acoustic signals consisting of closely-spaced and overlapping sequential time components.