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The salience of interaural temporal disparities (ITDs) conveyed by high-frequency signals is determined by the temporal features of their ongoing envelopes

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Many studies of binaural hearing reveal that envelopes of complex, high-frequency stimuli convey useful interaural time differences (ITDs). Envelope-based ITDs have, typically, been found to be less "potent" than those conveyed by low-frequency waveforms. When considering such findings, Blauert, in his classic textbook, noted that monaural, peripheral processing would result in 1) low-frequency inputs to the binaural processor that are essentially half-wave rectified versions of the input waveforms and 2) high-frequency inputs that are essentially full-wave rectified versions of only the envelopes of the input waveforms. Taking this into account, Blauert, echoing Colburn and Esquissaud (1976), surmised that low-frequency signals would ultimately convey "more distinct time cues" having greater "transient features" than would high-frequency signals and, therefore, be expected to provide more precise ITD information. By using high-frequency "transposed" stimuli having envelopes constructed to provide "more distinct time cues" we have shown in a variety of experimental contexts that the potency of envelope-based ITDs, can rival that measured with low-frequency stimuli. Our most recent experiments use "raised sine stimuli" in order to vary directly the temporal features of the envelope waveform including its "sharpness," "off-time," and interaural cross-correlation function. The new data will be discussed in terms of Blauert's insight.