

ACOUSTICS2008/1541
Using the frequency dispersive properties of otoacoustic emissions
to facilitate separation of different components

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Otoacoustic emissions (OAE) are frequency dispersive (different frequencies have different latencies), because of the properties of the basilar membrane. These frequency-dependent latency differences, are used to separate the Transient otoacoustic emissions (TEOAE) from the stimulus, but have not been used with stimulus frequency (SFOAE) and distortion product (DPOAE) otoacoustic emissions. If continuously-sweeping tones are used to generate DPOAE and SFOAE, the frequency dispersive properties of these OAE can not only be used to separate the evoking stimuli from the OAE, but also to separate OAE coming from different cochlear regions. Modifications of the LSF procedure to extract OAE (Long & Talmadge, 1997: JASA, 102:2831-2848; Talmadge et al. 1999: JASA, 105:275-292) permit not only the extraction of the different OAE components, but also provide an estimate of the latency of the OAE, which does not depend on group delay. DPOAE and SFOAE extracted using sweeping tones in normal and impaired adults and infants provide information about the nature of cochlea function in these populations