P. C. Pandey, D. S. Jangamashetti, and A. N. Cheeran, Binaural dichotic presentation to reduce the effect of temporal and spectral masking in sensorineural hearing impairment, J. Acoust. Soc. Am., vol. 110(5), p. 2705, 2001

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Abstract - **Sensorineural hearing loss is characterized by increased temporal and spectral masking, resulting in degraded speech perception. Earlier investigations have shown that binaural dichotic presentation using comb filters with complementary magnitude responses improved speech perception, particularly the place feature. Further, inter-aural switching with periodic trapezoidal fading functions improved the perception of duration feature. For simultaneously reducing the effect of the two types of masking, a scheme has been devised with a pair of time-varying comb filters, with bands corresponding to auditory critical bands. Thus the spectral components in neighboring critical bands do not mask each other, and the sensory cells on the basilar membrane get a relaxation time due to sweeping of the filter passbands. The scheme was implemented using linear phase 256-coefficient FIR filters. Magnitude responses were cyclically swept with 20-ms period, in steps by selecting the filter coefficients for each step from a pre-calculated set. Listening tests involved closed set identification of 12 vowel–consonant–vowel syllables. The processing scheme resulted in the improvement of recognition scores, response time, and transmission of features, particularly place and duration, indicating reduction in the effect of spectral and temporal masking.**