Investigation of Current Driven Loudspeakers

Current driven loudspeakers have previously been investigated but the literature is limited and the advantages and disadvantages are yet to be fully identified. This paper makes use of a non-linear loudspeaker model to analyse loudspeakers with distinct non-linear characteristics under voltage and current drive. A multi tone test signal is used in the evaluation of the driving schemes since it resembles audio signals to a higher degree than the signals used in total harmonic distortion and intermodulation distortion test methods. It is found that current drive is superior over voltage drive in a 5” woofer where a copper ring in the pole piece has not been implemented to compensate for eddy currents. However the drive method seems to be irrelevant for a 5” woofer where the compliance, force factor as well as the voice coil inductance has been optimized for linearity.

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