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Insertion Gain Repeatability versus Loudspeaker Location: You Want Me to Put My Loudspeaker W-H-E-R-E?

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SOMETHING ABOUT MEAD

The title says a lot about the uniqueness of Mead: Like no one else, he effectively would use personality and even humor to draw the reader in, even in the title of a prestigious scientific journal article! The genesis of this article was this annotator's (LR's) master's thesis study, which was carried out under Mead's direction. The thesis manuscript had not been fully completed at the time *Ear and Hearing* required submission of manuscripts for this special edition. Consequently, I was not allowed by my thesis committee to collaborate actively with Mead in the creation of this manuscript. To prevent a long delay in publishing the results (insertion gain was an important, developing topic at the time), Mead solved the problem by drafting the manuscript without my active participation in the writing, a solution acceptable to the thesis committee.

SUMMARY (Transcribed Abstract)

The traditional 0? (straight ahead) loudspeaker orientation during insertion gain measurements is a poor choice, based on theoretical considerations and repeatability. In a series of experiments, we demonstrated that a location 45? to the side, or 45? up and 45? to the side, provided a much more repeatable measurement of the same insertion gain response.

Annotator's Notes

1. The substitution method of sound-field equalization (no active reference microphone during measurements) was used in these experiments. Data may have been different using real-time or stored equalization.
2. We tested the "directly overhead" loudspeaker location, because doing so mimics a diffuse sound field at the ear, which Mead advocates as the best choice for hearing aid evaluation. A nasty, variable "shoulder bounce" (sound reflecting from the subject's shoulder's) destroyed repeatability at 700 Hz, however.

Untested speculation by LR: Using 0? azimuth and 45? elevation may prove to be the best location of the loudspeaker, providing a near-diffuse-field response with maximal repeatability.

Annotated by: Larry Revit