

Differences in directional sound source behavior and perception between assorted computer room models.

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Source directivity is an important input variable when using room acoustic computer modeling programs to generate auralizations. Previous research has shown that using a multichannel anechoic recording can produce a more natural sounding auralization, particularly as the number of channels is increased [J. H. Rindel, F. Otondo and C. L. Christensen, Proceedings of the International Symposium on Room Acoustics: Design and Science 2004, Paper V01 (2004)]. Further studies evaluating the quality of auralizations using one channel, four channel and thirteen channel anechoic recordings have been pursued. The effect of changing the room's material properties was studied in relation to turning the source around 180 degrees and on the range of acoustic parameters from the four and thirteen beams. As the room becomes increasingly diffuse, the importance of the modeled directivity decreases when considering reverberation time. However, for the three other parameters evaluated (sound pressure level, clarity index and lateral fraction), the changing diffusivity of the room does not diminish the importance of the directivity. The study therefore shows the importance of considering source directivity when using computer modeling. [Work supported by the National Science Foundation.]

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