

Readings in 3-D Sound and Spatial Audio

I. Introduction to Acoustics and Psychoacoustics

- Everest, F. Alton. (1994) "Fundamentals of Sound" Chapter 1 from *Master Handbook of Acoustics*, McGraw-Hill, New York.
- Everest, F. Alton. (1994) "Psychoacoustics." Chapter 2 from *Master Handbook of Acoustics*, McGraw-Hill, New York.

II. Primers

- 3D Working Group of the Interactive Audio Special Interest Group 3DWG of the MIDI Manufacturers Association. (1998) "3D Audio Rendering and Evaluation Guidelines, version 1.0"
- 3D Working Group Interactive Audio Special Interest Group 3DWG of the MIDI Manufacturers Association. (1999) "Interactive 3D Audio Rendering Guidelines, Level 2.0"
- Kendall, Gary S. (1995) "A 3-D Sound Primer: Directional Hearing and Stereo Reproduction." *Computer Music Journal*, 19(4), 23-46.

III. Physical Acoustics

- Kanana, Yuvi, Philip A. Nelson, Maurice Petyt, Sunghoon Choi (1999). "Numerical Modelling of the Transfer Functions of a Dummy-Head and of the External Ear." *The Proceedings of the AES 16th International Conference*, Rovaniemi, Finland, pp. 330-345.
- Algazi, V. Ralph, Richard O. Duda, and Dennis M. Thompson (2002). "The Use of Head-and-Torso Models for Improved Spatial Sound Synthesis." *Paper 5712, The 113th AES Convention.*"

IV. Psychoacoustics

- Blauert, Jens. (1974) *Spatial Hearing*, trans. John S. Allen, MIT Press, Cambridge MA. Excerpt from Chapter 2, pp. 36-50.
- Wightman, Frederic L., Kistler, Doris J. (1989) "Headphone simulation of free-field listening. I: Stimulus synthesis." *J. Acoust. Soc. Am.*, 85(2), 858-867.
- Wightman, Frederic L., Kistler, Doris J. (1989) "Headphone simulation of free-field listening. II: Psychophysical validation." *J. Acoust. Soc. Am.*, 85(2), 868-878.
- Martens, William L. (2003). "Perceptual Evaluation of Filters Controlling Source Direction: Customized and Generalized HRTFs for Binaural Synthesis." *Acoustical Science and Technology*, 24 (5), 220-232.
- Begault, Durand R. (1991) "Challenges to the Successful Implementation of 3-D Sound." *J. Audio Eng. Soc.*, 39(11), 864-870.

V. Headphone and Stereo Loudspeaker Reproduction

- Sunier, John. (1986) "A History of Binaural Sound." *Audio*, March, 1986, pp. 36-46.
- Bauer, Benjamin B. (1961) "Phasor Analysis of Some Stereophonic Phenomena," *J. Acoust. Soc. Am.*, 33(11), 1536-1539.

- Schroeder, M. R. and Atal, B. S. (1963) "Computer Simulation of Sound Transmission In Rooms." *IEEE Int. Conv. Record*, 7, 150-155.
- Begault, Durand R. (1994) Excerpt beginning with "Implementing HRTF Cues" from "Chapter Four Implementing 3-D Sound." pp. 135-168 from *3-D Sound for Virtual Reality and Multimedia*, Academic Press, Cambridge, MA.
- Durlach, N. I., Rigopulos, A., Pang, X. D., Woods, W. S., Kulkarni, A., Colburn, H. S., and Wenzel, E. M. (1992) "On the Externalization of Auditory Images." *Presence*, 1(2), 251-257.
- Gardner, William G. (1995) "Transaural 3-D Audio." M.I.T. Media Laboratory Computing Section Technical Report No. 342, July 20, 1995.
- Gardner, William G. (1997) "Head Tracked 3-D Audio Using Loudspeakers." Proc. 1997 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, NY.

VI. Environmental Sound I: Reverberation

- Schroeder, M. R., Gottlob, D., and Siebrasse, K. F. (1974) "Comparative study of European concert halls: correlation of subjective preference with geometric and acoustic parameters." *J. Acoust. Soc. Am.*, 56(4), 1195-1201.
- Rasch, R. A. & Plomp, R. (1982) "The Listener and the Acoustic Environment" from the *Psychology of Music*, edited by Diana Deutsch, Academic Press, New York.
- Schroeder, M. R. (1962) "Natural Sounding Artificial Reverberation." *J. Audio Eng. Soc.*, 10(3), 219-223.
- Chowning, John M. (1971) "The Simulation of Moving Sound Sources." *J. Audio Eng. Soc.*, 19(1), 2-6. [This printing taken from *Computer Music Journal*]
- Kendall, Gary S. and Martens, William L. (1984) "Simulating the Cues of Spatial Hearing in Natural Environments." *Proceedings of the 1984 International Computer Music Conference*, Paris.

VII. Environmental Sound II: Spaciousness, Precedence and Distance

- Kendall, Gary. (1995) "The Decorrelation of Audio Signals and Its Impact on Spatial Imagery." *Computer Music Journal*, 19(4), 71-87.
- Griesdinger, David (1999). "Objective Measures of Spaciousness and Envelopment." *The Proceedings of the AES 16th International Conference*, Rovaniemi, Finland.
- Martens, William L (1999). "The Impact of Decorrelated Low-Frequency Reproduction on Auditory Spatial Imagery: Are Two Subwoofers Better Than One?" *The Proceedings of the AES 16th International Conference*, Rovaniemi, Finland.
- Gardner, M. B. (1968) "Historical background of the Haas and/or precedence effect." *J. Acoust. Soc. Am.*, 54, 1243-1295.
- Zahorik, Pavel (2002). "Auditory Display of Sound Source Distance." *Proceedings of the 2002 International Conference on Auditory Display*, Kyoto, Japan,.

VIII. More Multi-Loudspeaker Considerations

- Pulkki, Ville (2001) "Localization of Amplitude-Panned Virtual Sources II: Two- and Three-Dimensional Panning." *J. Audio Eng. Soc.*, 49(9).
- Gerzon, Michael A. (1985) "Ambisonics in Multichannel Broadcasting and Video." *J. Audio Eng. Soc.*, 33(11).

Jot, Jean-Marc, Lacher, Veronique and Pernaux, Jean-Marie. (1999) "A Comparative Study of 3-D Audio Encoding and Rendering Techniques," from The Proceedings of the AES 16th International Conference, Rovaniemi, Finland, pp. 281-300.

Bosi, Marina (1999). "High Quality Multichannel Audio Coding: Trends and Challenges." Proceedings of the AES 16th International Conference, Rovaniemi, Finland,