

# Journal articles

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May 19, 2010

## References

- [1] Jont Allen. Time-domain impedance. *unpublished*, 2009.
- [2] Jont Allen and Feipeng Li. Speech perception and cochlear signal processing. *IEEE Signal Processing Magazine*, 26(4):73–77, 2009.
- [3] J. B. Allen. Cochlear models - 1978. In M. Hoke and E. deBoer, editors, *Models of the auditory system and related signal processing techniques*, volume 9, pages 1–16. Sand. Audiol., 1979.
- [4] Jont B. Allen. Consonant recognition and the articulation index. *J. Acoust. Soc. Am.*, 117(4):2212–2223, 2005.
- [5] J. B. Allen. A short history of telephone psychophysics. *J. Audio Eng. Soc.*, Reprint 4636:1–37, 1997.
- [6] J. B. Allen. Harvey Fletcher's role in the creation of communication acoustics. *J. Acoust. Soc. Am.*, 99(4):1825–1839, 1996.
- [7] J. B. Allen. How do humans process and recognize speech? *IEEE Transactions on speech and audio*, 2(4):567–577, 1994.
- [8] J. B. Allen. Magnitude and phase-frequency response to single tones in the auditory nerve. *J. Acoust. Soc. Am.*, 73(6):2071–2092, 1983.
- [9] J. B. Allen. Cochlear micromechanics: A physical model of transduction. *J. Acoust. Soc. Am.*, 68(6):1660–1670, 1980.
- [10] J. B. Allen. FASTFILT - an FFT-based filtering program (Chapter 3). In *Digital signal processing programs*, pages 1–9. IEEE Press, 1979.

- [11] J. B. Allen. Short time spectral analysis, synthesis, and modification by discrete Fourier transform. *IEEE Trans. Acoust. Speech and Sig. Processing*, 25:235–238, 1977.
- [12] J. B. Allen. Two-dimensional cochlear fluid model: New results. *J. Acoust. Soc. Am.*, 61(1):110–119, 1977.
- [13] J. B. Allen. Cochlear micromechanics - A mechanism for transforming mechanical to neural tuning within the cochlea. *J. Acoust. Soc. Am.*, 62:930–939, 1977.
- [14] J. B. Allen. Corrections to “short time spectral analysis, synthesis, and modification by discrete Fourier transform”. *IEEE Trans. Acoust. Speech and Sig. Processing*, 26?:589, 1977.
- [15] J. B. Allen. On the aging of steel guitar strings. *Catgut Acoustical Society Newsletter*, pages 27–29, 1976.
- [16] J. B. Allen and D. A. Berkley. Image method for efficiently simulating small-room acoustics. *J. Acoust. Soc. Am.*, 65:943–950, 1979.
- [17] J. B. Allen, D. A. Berkley, and J. Blauert. A multimicrophone signal-processing technique to remove room reverberation from speech signals. *J. Acoust. Soc. Am.*, 62(4):912–915, 1977.
- [18] Jont B. Allen, Wai-Yip Chan, and Stephen Voran. Editorial: Perceptual models for speech, audio and music processing. *EURASIP Journal on Audio, Speech, and Music Processing*, 2007:1–2, 2007. <http://www.hindawi.com/journals/asmp/contents.html>.
- [19] J. B. Allen and P. F. Fahey. A second cochlear-frequency map that correlates distortion product, neural tuning measurements. *J. Acoust. Soc. Am.*, 94(2, Pt. 1):809–816, 1993.
- [20] J. B. Allen and P. F. Fahey. Using acoustic distortion products to measure the cochlear amplifier gain on the basilar membrane. *J. Acoust. Soc. Am.*, 92(1):178–188, 1992.
- [21] J. B. Allen, J. L. Hall, and P. S. Jeng. Loudness growth in 1/2-octave bands (LGOB)—A procedure for the assessment of loudness. *J. Acoust. Soc. Am.*, 88(2):745–753, 1990.
- [22] Jont B. Allen, Patricia S. Jeng, and Harry Levitt. Evaluating human middle ear function via an acoustic power assessment. *Jol. of Rehabil. Res. Dev.*, 42(4):63–78, 2005.

- [23] J. B. Allen and B. L. Lonsbury-Martin. Otoacoustic emissions. *J. Acoust. Soc. Am.*, 93(1):568–569, 1993.
- [24] J. B. Allen and J. E. Mazo. A decision-free equalization scheme for minimum phase channels. *IEEE Trans. Comm.*, COM-22(10):1732–1733, 1974.
- [25] Jont B. Allen and Stephen T. Neely. What is the *characteristic impedance*  $z_0(x, \omega)$  and the *propagation function*  $\gamma(x, \omega)$ , for inhomogeneous media? *IEEE Transactions on advanced packaging*, unpublished:pages?, 2007.
- [26] J. B. Allen and S. T. Neely. Modeling the relation between the intensity JND and loudness for pure tones and wide-band noise. *J. Acoust. Soc. Am.*, 102(6):3628–3646, 1997.
- [27] J. B. Allen and L. R. Rabiner. Unbiased spectral estimation, system identification using short-time spectral analysis methods. *Bell System Tech. J.*, 58(8):1743–1763, 1979.
- [28] J. B. Allen and L. R. Rabiner. A unified approach to short-time Fourier analysis and synthesis. *Proc. IEEE*, 65(11):1558–1564, 1977.
- [29] J. B. Allen and M. M. Sondhi. Cochlear macromechanics: Time-domain solutions. *J. Acoust. Soc. Am.*, 66(1):120–132, 1979.
- [30] P. F. Fahey and J. B. Allen. Measurement of distortion product phase in the ear canal of cat. *J. Acoust. Soc. Am.*, 102(5):2880–2891, 1997.
- [31] P. F. Fahey and J. B. Allen. Nonlinear phenomena as observed in the ear canal, and at the auditory nerve. *J. Acoust. Soc. Am.*, 77(2):599–612, 1985.
- [32] PS Jeng, Jont Allen, JA Miller, and Harry Levitt. Wideband power reflectance and power transmittance as tools for assessing middle-ear function. *Perspectives on Hearing and Hearing Disorders in Childhood*, 18(2):44–57, 2008. ASHA journal <http://journals.asha.org/perspectives/terms.dtl>.
- [33] P.S. Jeng, Jont B. Allen, J.A. Miller, and H. Levitt. Wideband power reflectance and power transmittance as tools for assessing middle-ear function. *Perspectives on Hearing and Hearing Disorders in Childhood*, 18:44–57, 2008. Invited.
- [34] A. H. Koenig, J. B. Allen, D. A. Berkley, and T. H. Curtis. Determination of masking-level differences in a reverberant environment. *J. Acoust. Soc. Am.*, 61:1374–1376, 1977.
- [35] Anjali Menon Li Feipeng and Jont B. Allen. A psychoacoustic method to find the perceptual cues of stop consonants in natural speech. *J. Acoust. Soc. Am.*, 127(4):2599–2610, apr 2010.

- [36] Feipeng Li and Jont Allen. Manipulation of consonants in natural speech. *IEEE Trans. on Audio, Speech and Language Processing*, Accepted, 2010.
- [37] Feipeng Li and Jont B. Allen. Additivity law of frequency integration for consonant identification in white noise. *J. Acoust. Soc. Am.*, 126(1):347–353, 2009.
- [38] B. Lobdell and Jont B. Allen. Modeling and using the vu-meter (volume unit meter) with comparisons to root-mean-square speech levels. *J. Acoust. Soc. Am.*, 121(1):279–285, 2007.
- [39] Bryce Lobdell and Jont B. Allen. A model of the vu (volume-unit) meter, with speech applications. *J. Acoust. Soc. Am.*, 2006.
- [40] Bryce Lobdell, Jont B. Allen, and Mark Hasegawa-Johnson. Intelligibility predictors and neural representations of speech. 2009. submitted.
- [41] Anjali Menon, Feipeng Li, and Jont B. Allen. A new methodology to study perceptual cues of 8 fricative consonants in natural speech. *J. Acoust. Soc. Am.*, 2010. (Submitted 2/2/10).
- [42] S. T. Neely and J. B. Allen. Invertability of a room impulse response. *J. Acoust. Soc. Am.*, 66:165–169, 1979.
- [43] P. Parent and J. B. Allen. Wave model of the human tympanic membrane. *Hearing Research*, 263:152–167, 2010. Presented at MEMRO 2009, Stanford University.
- [44] Pierre Parent and Jont B. Allen. Wave model of the cat tympanic membrane. *J. Acoust. Soc. Am.*, 122(2):918–931, 2007.
- [45] S. A. Phatak, Y. Yoon, D. M. Gooler, and J. B. Allen. Consonant loss profiles in hearing impaired listeners. *J. Acoust. Soc. Am.*, 126(5):2683–2694, 2009.
- [46] S. Phatak and Jont B. Allen. Consonant and vowel confusions in speech-weighted noise. *J. Acoust. Soc. Am.*, 121(4):2312–26, 2007.
- [47] S. Phatak, Andrew Lovitt, and Jont B. Allen. Consonant confusions in white noise. *J. Acoust. Soc. Am.*, 124(2):1220–33, 2008.
- [48] S. Puria and J. B. Allen. Measurements and model of the cat middle ear: Evidence for tympanic membrane acoustic delay. *J. Acoust. Soc. Am.*, 104(6):3463–3481, 1998.
- [49] S. Puria and J. B. Allen. A parametric study of cochlear input impedance. *J. Acoust. Soc. Am.*, 1(89):287–309, 1991.
- [50] M. Régnier and Jont B. Allen. The role of across-frequency timing coincidences for speech perception in noise. *Nature*, 2007.

- [51] L. R. Rabiner and J. B. Allen. On the implementation of a short-time analysis method for system identification. *IEEE Trans. Acoust. Speech and Sig. Processing*, ASSP-28(1):69–78, 1980.
- [52] L. R. Rabiner and J. B. Allen. Short-time Fourier analysis techniques for FIR system identification, power spectrum estimation. *IEEE Trans. Acoust. Speech and Sig. Processing*, ASSP-27(2):182–192, 1979.
- [53] L. R. Rabiner, R. E. Crochiere, and J. B. Allen. FIR system modeling, identification in the presence of noise and with band limited inputs. *IEEE Trans. Acoust. Speech and Sig. Processing*, ASSP-26(4):319–333, 1978.
- [54] Marion S. Regnier and Jont B. Allen. A method to identify noise-robust perceptual features: application for consonant /t/. *J. Acoust. Soc. Am.*, 123(5):2801–2814, 2008.
- [55] I. W. Sandberg and J. B. Allen. Almost periodic response determination for models of the basilar membrane. *AT&T Tech. Jol.*, 64(8):1775–1786, 1985.
- [56] L.K. Saul, M.R. Rahim, and Jont B. Allen. A statistical model for robust integration of narrowband cues in speech. *Computer Speech and Language*, 15:175–194, 2001.
- [57] D. Sen and Jont B. Allen. Functionality of cochlear micromechanics—as elucidated by the upward spread of masking and two tone suppression. *Acoustics Australia*, 34(1):43–51, 2006.
- [58] Roger Serwy and Jont B. Allen. Revisiting the effects of high level on consonant perception. *J. Acoust. Soc. Am.*, Submitted:TBD, 2010.
- [59] J. O. Smith and J. B. Allen. Variable bandwidth adaptive delta modulation. *Bell System Tech. Jol.*, pages 719–737, 1980.
- [60] Aandrea Trevino, Todd Coleman, and Jont Allen. A dynamical point process model of auditory nerve spiking in response to complex sounds. *J. Comput Neurosci*, In Press, 2009. In Press; Accepted 3/1/09.
- [61] S. E. Voss and J. B. Allen. Measurement of acoustic impedance and reflectance in the human ear canal. *J. Acoust. Soc. Am.*, 95(1):372–384, 1994.
- [62] R Weece and Jont B. Allen. A method for calibration of bone conduction transducers to measure the mastoid impedance. *Hearing Resh.*, 263(1-2)(263):216–223, may 2010. MEMRO 2009: Middle-Ear Science and Technology.
- [63] R.H. Withnell, C. Hazlewood, P. Jeng, and Jont B. Allen. The ear as an acoustic detector of power. *Science*, In preparation, 2006. dead.

- [64] RH Withnell, PS Jeng, Kelly Waldvogel, Kari Morgenstein, and Jont B. Allen. An in-situ calibration for hearing thresholds. *J. Acoust. Soc. Am.*, 125(3):1605–1611, 2009.
- [65] R.H. Withnell, P. Parent, PS Jeng, and J.B. Jont. Using wideband reflectance to measure the impedance of the middle ear. *The Hearing Journal*, 62(10):36–41, 2009. [www.thehearingjournal.com](http://www.thehearingjournal.com).
- [66] Nadeeka Yapa, Jont B. Allen, and Miriam Furst. Narrow band speech and pitch detection thresholds: a comparison of human performance to critical band models. *JASA*, 2007.
- [67] R. Yarlagadda and J. B. Allen. Aliasing errors in short-time analysis. *Signal Processing*, 4:79–84, 1982.

# Invited Reviews

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April 27, 2010

## References

- [1] J. B. Allen. Harvey Fletcher 1884–1981. In J. B. Allen, editor, *The ASA edition of Speech, Hearing in Communication*, pages A1–A34. Acoustical Society of America, Woodbury, New York, 1995.
- [2] J. B. Allen. Nonlinear cochlear signal processing and masking in speech perception. In Jacob Benesty and Mohan Sondhi, editors, *Springer Handbook on speech processing and speech communication*, chapter 3, pages 1–36. Springer, Heidelberg Germany, 2008.
- [3] J. B. Allen. Derecruitment by multiband compression in hearing aids. In C.I. Berlin, editor, *The Efferent Auditory System*, chapter 4, pages 73–86. Singular, 401 West A St., Suite 325, San Diego, CA 92101, 1999. Includes a CDROM video talk by J. B. Allen in MP3 format.
- [4] J. B. Allen. Cochlear modeling - 1980. In Mark H. Holmes and Lester A. Rubenfeld, editors, *Lecture notes in biomathematics: Mathematical modeling of the Hearing Process*, volume 43, pages 1–8, New York, 1981. Springer-Verlag.
- [5] J. B. Allen. Nonlinear cochlear signal processing. In A.F. Jahn and J. Santos-Sacchi, editors, *Physiology of the Ear, Second Edition*, chapter 19, pages 393–442. Singular Thomson Learning, 401 West A Street, Suite 325 San Diego, CA 92101, 2001.
- [6] J. B. Allen. Cochlear signal processing. In A. F. Jahn and J. Santos-Sacchi, editors, *Physiology of the ear*, pages 243–270. Raven Press, 1988.
- [7] J. B. Allen. Amplitude compression in hearing aids. In R. Kent, editor, *MIT Encyclopedia of Communication Disorders*, chapter Part IV, pages 413–423. MIT Press, MIT, Boston Ma, 2003.

- [8] J. B. Allen. DeRecruitment by multiband compression in hearing aids. In B. Kollmeier, editor, *Psychoacoustics, speech, and hearing aids*, pages 141–152. World Scientific Press, Singapore, 1996.
- [9] J. B. Allen. How do humans process and recognize speech. In R.P. Ramachandran and R.J. Mammone, editors, *Modern Methods of speech processing*, pages 251–275. Kluwer books, Boston, 1996.
- [10] J. B. Allen. Psychoacoustics. In J.G. Webster, editor, *Wiley Encyclopedia of Electrical and Electronics Engineering*, volume 17, pages 422–437. John Wiley & Sons, Inc, New York, NY, 1999.
- [11] J. B. Allen. Cochlear modeling. *IEEE ASSP Magazine*, 2(1):3–20, 1985.
- [12] J. B. Allen and S.T. Neely. Micromechanical models of the cochlea. *Physics Today*, 45(7):40–47, 1992.
- [13] D.A. Berkley and J. B. Allen. Normal listeners in typical rooms: the physical, psychophysical correlates of reverberation. In G. Studebaker and I. Hochberg, editors, *Acoustical Factors Affecting Hearing Aid Performance*, pages 3–14. Allyn, Bacon, Boston, second edition, 1993.
- [14] B.P. Kimberley, D.K. Brown, and J. B. Allen. Distortion product emissions and sensorineural hearing loss. In M.S. Robinette and T.J. Glattke, editors, *Otoacoustic emissions, Clinical Applications*, pages 181–204, New York, Stuttgart, 1997. Thieme.

# Books

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## References

- [1] J. B. Allen. *Articulation and Intelligibility*. Morgan and Claypool, 3401 Buckskin Trail, LaPorte, CO 80535, 2005. ISBN: 1598290088.
- [2] J. B. Allen, J. L. Hall, A. Hubbard, S. T. Neely, and A. Tubis. *Peripheral auditory mechanisms*. Springer Verlag, Heidelberg, New York, 1986.
- [3] Harvey Fletcher. Speech and Hearing in Communication. In J. B. Allen, editor, *The ASA edition of Speech and Hearing in Communication*. Acoustical Society of America, Suite 1N01, 2 Huntington Quadrangle, Melville, New York, 1995.

# Proceedings Articles

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April 27, 2010

## References

- [1] Jont Allen and Paul Fahey. Outer hair cell mechanics reformulated with acoustic variables. In *Abst.*, page In Press, Baltimore MD, 2006. ARO.
- [2] Jont Allen and Feipeng Li. Cochlear nonlinearities and phoneme recognition. In *Proceedings of ASRU, 2009*, NJ, 2009. IEEE.
- [3] Jont Allen, Feipeng Li, and Marion Régnier. Cochlear nonlinearities and phoneme recognition. In *IEEE WASPAA, Mohonk NY*, NJ, 2009. IEEE.
- [4] J. Allen and D. Sen. A unified theory of two tone suppression and the upward spread of masking. In *Proceedings of the 16th Internation Congreess on Acoustics and 135th meeting of the Acoustical Society of America*. ASA, 1998.
- [5] J. B. Allen. A hair cell model of neural response. In E. deBoer and M. A. Viergever, editors, *Mechanics of hearing*. Delft Univ. Press, Delft, The Netherlands, 1983.
- [6] J. B. Allen. Measurement of eardrum acoustic impedance. In J. B. Allen, J. L. Hall, A. Hubbard, S. T. Neely, and A. Tubis, editors, *Peripheral Auditory Mechanisms*, pages 44–51, New York, 1986. Springer Verlag.
- [7] J. B. Allen. Modeling the noise damaged cochlea. In P. Dallos, C. D. Geisler, J. W. Matthews, M. A. Ruggero, and C. R. Steele, editors, *The Mechanics and Biophysics of Hearing*, pages 324–332, New York, 1991. Springer-Verlag.
- [8] J. B. Allen. Response to deBoer regarding BM tuning. In H. Dufhuis, J. W. Horst, P. van Dijk, and S. M. van Netten, editors, *Biophysics of hair cell sensory systems*, page 304. World Scientific, Singapore, New Jersey, London, Hong Kong, 1993.

- [9] J. B. Allen. Moderated discussion on selected topics in cochlear modeling. In A.W. Gummer, editor, *Biophysics of the Cochlea, from Molecules to Models*, pages 563–592. World Scientific Publishing Co., PO Box 128, Farrer Road, Singapore 912805, 2003.
- [10] J. B. Allen. DeRecruitment by multiband compression in hearing aids. In W. Jesteadt and *et al.*, editors, *Modeling Sensorineural Hearing Loss*, chapter 6, pages 99–112. Lawrence Erlbaum Assoc., Mahwah, NJ, 1997.
- [11] J. B. Allen. OHCs shift the excitation pattern via BM tension. In E.R. Lewis, G.R. Long, R.F. Lyon, P.M. Narins, C.R. Steele, and E. Hecht-Poinar, editors, *Diversity in auditory mechanics*, pages 167–175. World Scientific Press, Singapore, 1997.
- [12] J. B. Allen. Recruitment compensation as a hearing aid signal processing strategy. In Neeraj Magotra, editor, *IEEE ISCAS 1998*, pages 1–4 (TAA11–1), Piscataway, NJ, 1998. Naval Postgraduate school, Monterey CA.
- [13] Jont B. Allen. Moderator of technical discussion on cochlear modeling. In Alfred Nuttal and *et al.* deBoer, Egbert, editors, *Auditory Mechanisms, Processes and Models, Portland OR, July 23-28, 2005*, chapter Appendix, pages 521–543. World Scientific, New Jersey, Singapore, 2005.
- [14] J. B. Allen. The articulation index is a Shannon channel capacity. In D. Pressnitzer, Alain de Cheveigné, Stephen McAdams, and Lionel Collet, editors, *Auditory signal processing: physiology, psychoacoustics, and models*, chapter Speech, pages 314–320. Springer Verlag, New York, NY, 2004.
- [15] J. B. Allen. A history of telephone psychophysics and hearing aids. In Arne Rasmussen, editor, *18th Danavox Symposium*, pages 83–106. Holmens Trykkeri, Denmark, ISBN 87-982422-8-8, 1999.
- [16] J. B. Allen. The intensity JND comes from Poisson neural noise: Implications for image coding. In B.E. Rogowitz and T.N. Pappas, editors, *Human Vision and Electronic Imaging V*, volume 3959, pages 222–233, PO Box 10, Bellingham, Washington 98227-0010, 2000. Proc. of SPIE.
- [17] J. B. Allen. Is the basilar membrane tuning the same as neural tuning—where do we stand? In J. P. Wilson and D. T. Kemp, editors, *Cochlear mechanisms - Structure, function and models*, volume Nato ASI Series. Plenum Press, 1989.
- [18] Jont B. Allen. Cochlear modeling and its role in human speech recognition. In IPAM, <http://www.ipam.ucla.edu/programs/es2005/>, 2005. IPAM.
- [19] J. B. Allen. A history of telephone psychophysics: Audio applications. In *1999 IEEE Conference on Speech and Audio*, pages 243–256, Mohonk Mountain House, 1999. IEEE.

- [20] J. B. Allen. New methods for the measurement, evaluation of room acoustics. Number F2-10, Beijing, 1992. 14th ICA.
- [21] J. B. Allen. Cochlear modeling - 1980. *Proc. IEEE Int. Conf. Acoust. Speech and Sig. Processing*, pages 768–769, 1981.
- [22] J. B. Allen. Applications of the short-time Fourier transform to speech processing, spectral analysis. In *Proc. ASSP Workshop on Spectral Estimation*, pages 6.3.1–6.3.5, 1981.
- [23] Jont B. Allen and Paul Fahey. Outer hair cell mechanics reformulated with acoustic variables. In Alfred Nuttal and et al. deBoer, Egbert, editors, *Auditory Mechanisms, Processes and Models, Portland OR, July 23-28, 2005*, pages 194–209. World Scientific, New Jersey, Singapore, 2005.
- [24] J. B. Allen and P. F. Fahey. Evidence for a second cochlear map. In H. Duffhuis, J. W. Horst, P. van Dijk, and S. M. van Netten, editors, *Biophysics of hair cell sensory systems*, pages 296–303. World Scientific, Singapore, New Jersey, London, Hong Kong, 1993.
- [25] J. B. Allen and P. F. Fahey. Nonlinear behavior at threshold determined in the auditory canal on the auditory nerve. In R. Klinke and R. Hartmann, editors, *Hearing – Physiological bases and psychophysics*, pages 128–134. Springer-Verlag, Bad Nauheim, Germany, 1983.
- [26] Jont B. Allen, Marion Régnier, Sandeep Phatak, and Feipeng Li. Nonlinear cochlear signal processing and phoneme perception. In N. P. Cooper and D. T. Kemp, editors, *Proceedings of the 10th Mechanics of Hearing Workshop*, pages 93–105. World Scientific Publishing Co., Singapore, 2009.
- [27] J. B. Allen and L. R. Rabiner. Unbiased spectral estimation, system identification by DFT. In *Proc. Joint Automatic Control Conf.*, pages 166–172, 1979.
- [28] J. B. Allen and Deep Sen. The role of micromechanics in explaining two-tone suppression and the upward spread of masking. In A.W. Gummer, editor, *Biophysics of the Cochlea, from Molecules to Models*, pages 383–392. World Scientific Publishing Co., PO Box 128, Farrer Road, Singapore 912805, 2003.
- [29] J. B. Allen and Deep Sen. Is tectorial membrane filtering required to explain two tone suppression and the upward spread of masking? In Hiroshi Wada, Tomonori Takasaki, K. Kieda, K. Ohya, and T. Koike, editors, *Recent Developments in Auditory Mechanics*, pages 137–143. World Scientific Publishing Co., PO Box 128, Farrer Road, Singapore 912805, 1999.
- [30] P. Fahey and J. B. Allen. Power law features of acoustic distortion product emissions. In H. Duffhuis, J. W. Horst, and H. P. Wit, editors, *Basic issues in hearing*, pages 124–134. Academic Press, London, 1988.

- [31] P. F. Fahey and J. B. Allen. Characterizations of cubic intermodulation distortion products in the cat external auditory meatus. In J. B. Allen, J. L. Hall, A. Hubbard, S. T. Neely, and A. Tubis, editors, *Peripheral auditory mechanisms*, pages 314–321. Springer Verlag, 1986.
- [32] N Grimault, S. McAdams, and Jont B. Allen. Auditory scene analysis: a prerequisite for loudness perception. In Birger Kollmeier and Georg Klump, editors, *ISH Oldenburg Germany*, chapter Auditory Scene Analysis, pages nnn–NNN. Springer, New York, 2007.
- [33] Woojae Han, Riya Singh, and Jont Allen. Snr-loss in hearing impairment and feature enhancement. In *Aging and speech communication*, Bloomington, IN, 2009. Larry Humes.
- [34] Woojae Han, Riya Singh, and Jont Allen. Snr-loss in hearing impairment and feature enhancement. In *Acoustical Soc. Am.*, San Antonio, TX, 2009. ASA.
- [35] Cantell Hazelwood, Pat Jeng, Rob Withnell, and Jont B. Allen. Is the ear a detector of power. In *Abst.*, Scottsdale, AZ, 2007. AAS.
- [36] C.J. Johnson, Sandeep Phatak, S.D. Steele, Jont Lobdell, B. Allen, Yonn Seok-Youn, and Simone Frame. Reading disability profiles & consonant-vowel confusions in perception-production tasks. In *Boston 2007*. ASHA, 2007.
- [37] J.J. Johnston, J. Herre, S. Quackenbush, J. Allen, M. Dietz, G. Davidson, and T. Boltze. A tutorial on perceptual audio coding. In *Workshop on Perceptual Audion Coding Techniques*, San Francisco, Ca, 1998. 105th AES Conf.
- [38] F. Li and J.B. Allen. Identification of perceptual cues for consonant sounds and the influence of sensorineural hearing loss on speech perception. In *Proceedings of International Symposia on Hearing*, Salamanca, Spain, 2009.
- [39] Feipeng Li and Jont B. Allen. Enhancing speech for the hearing impaired. In *Abst.*, Scottsdale, 2007. AAS.
- [40] Bryce Lobdel and Jont B. Allen. Critical ratio for tones, modulated tones and noise, and speech. *J. Acoust. Soc. Am.*, Abst., 2005.
- [41] B.E. Lobdell, J.B. Allen, and M.A. Hasegawa-Johnson. Human speech perception and feature extraction. In *Proc. Interspeech*, pages 1797–1800, 2008.
- [42] Bryce Lobdell and Jont B. Allen. An information theoretic tool for investigating speech perception. In *Proceedings of Interspeech*. International Conference on Spoken Language Processing (Interspeech), 2006.

- [43] Bryce Lobdell and Jont B. Allen. The relationship between the articulation index spectrogram and off-diagonal confusion matrix performance intensity functions. In *Abst.*, page 1930, NY, 2005. J. Acoust. Soc. Am.
- [44] Bryce Lobdell, Sandeep Phatak, and Jont B. Allen. A time-frequency representation of temporal modulations in critical bands for speech. In *Midwinter Meeting of ARO*, page 98. ARO, 2005.
- [45] Andrew Lovitt. Detection threshold for one octave and half octave bands of speech. Master's thesis, University of Illinois at Urbana-Champaign, 2005.
- [46] Andrew Lovitt and Jont Allen. Using listener and talker variability to understand confusion patterns. In *IHCN*, 2006.
- [47] Andrew Lovitt and Jont Allen. 50 years late: Repeating miller-nicely 1955. In *Proceedings of Interspeech*, page IN PRESS. International Conference on Spoken Language Processing (Interspeech), 2006.
- [48] Andrew Lovitt and Jont Allen. Critical ratio for tones, modulated tones and noise, and speech. In *The Journal of the Acoustical Society of America*, volume 118, page 1894, 2005.
- [49] Andrew Lovitt and Allen Jont B. Abst. 2005. Abstract for Fall 2005 Meeting of the Acoustical Soc. Am. /STUDENTS/AndrewLovitt/asa.f05.
- [50] Andrew Lovitt, Bryce Lobdell, and Jont Allen. Psychometric per utterance confusion patterns in listening experiments. In *The 29th Midwinter Research Meeting of the Association for Research in Otolaryngology*, Baltimore MD, 2006. ARO.
- [51] Andrew Lovitt, Sandeep Phatak, and Jont B. Allen. Interpreting consonant and vowel confusion functions using information-theoretic measures. In *Abst.*, Baltimore MD, 2006. ARO.
- [52] Sarah Melamed, Ron Chambers, and Jont B. Allen. Tinnitus study. In *Abst.*, Scottsdale, AZ, 2007. AAS.
- [53] Stephen Neely and Jont B. Allen. Retrograde waves in the cochlea. In N. P. Cooper and D. T. Kemp, editors, *Proceedings of the 10th Mechanics of Hearing Workshop*, pages 62–67. World Scientific Publishing Co., Singapore, 2009. In Press.
- [54] S. T. Neely and J. B. Allen. Relation between the rate of growth of loudness and the intensity DL. In W. Jesteadt and *et al.*, editors, *Modeling Sensorineural Hearing Loss*, pages 213–222. Lawrence Erlbaum Assoc., Mahwah, NJ, 1997.

- [55] S. T. Neely and J. B. Allen. Predicting the intensity JND from the loudness of tones and noise. In *Psychophysical and Physiological advances in hearing*, pages 458–464, 19B Compton Terrace, London N1 2UN, England, 1998. Whurr Publishers LTD. ISH Meeting, Grantham England.
- [56] Pierre Parent and Jont Allen. Wave model of the human tympanic membrane. In *MERMO, Stanford*. 2009.
- [57] Pierre Parent and Jont B. Allen. Wave model of the tympanic membrane. In *Abst.*, Baltimore MD, 2006. ARO.
- [58] S. A. Phatak and Jont B. Allen. Consonant and vowel confusions in speech-weighted noise. In *Proceedings of Interspeech*, Pittsburgh, PA, 2006. International Conference on Spoken Language Processing (Interspeech).
- [59] S. A. Phatak and Jont B. Allen. Measuring nonsense CV confusions under speech-weighted noise. In *Abst.*, New Orleans, LA, 2005. ARO MidWinter meeting.
- [60] S. A. Phatak and Jont B. Allen. Consonant-vowel interaction in syllables. In *Aging and speech communication*, Bloomington, IN, 2005. Larry Humes.
- [61] S. Phatak and Jont B. Allen. Consonant Profiles for Individual Hearing-ImpairedListeners. In *Abst.*, Scottsdale, AZ, 2007. AAS.
- [62] S. Phatak, Y.-S. Yoon, and Jont B. Allen. Consonant profiles for Hearing-Impaired listeners. In *Abst.*, Denver, CO, 2007. ARO.
- [63] M Régnier and Jont B. Allen. The importance of across-frequency timing coincidences in the perception of someEnglish consonants in noise. In *Abst.*, Denver, 2007. ARO.
- [64] M Régnier and Jont B. Allen. Perceptual cues of some CV sounds studied in noise. In *Abst.*, Scottsdale, 2007. AAS.
- [65] L. R. Rabiner, R. E. Crochiere, and J. B. Allen. Comparisons of system identification methods in the presence of high noise level, band limited inputs. In *Proc. IEEE Int. Conf. Acoust. Speech and Sig. Processing*, pages 183–187, Tulsa, OK, 1978.
- [66] I. W. Sandberg and J. B. Allen. Steady state determination for models of the basilar membrane. In J. B. Allen, J. L. Hall, A. Hubbard, S. T. Neely, and A. Tubis, editors, *Peripheral auditory mechanisms*, pages 338–345. Springer Verlag, 1986.

- [67] L.K. Saul and J. B. Allen. Periodic component analysis: an eigenvalue method for representing periodic structure in speech. In T. Dietterich, T. Leen, and V. Tresp, editors, *Adv. Neural Info. Proc. Sys.*, volume 13, pages ?–?, Cambridge, MA, 2001. MIT Press.
- [68] L.K. Saul, M.G. Rahim, and J. B. Allen. Learning from examples in critical bands of speech. In *ASRU99*, New Jersey, 1999. IEEE.
- [69] Deep Sen and Jont B. Allen. Predicting dpoaes using a model of the cochlea incorporating a voltage controlled stiffness coupled to a forward/reverse model of the ear canal and middle ear. New Orleans, 2005. ARO.
- [70] D. Sen and J. B. Allen. A new auditory masking model for speech and audio coders. In *1997 IEEE workshop on speech coding for telecommunications proceedings*, pages 53–54. IEEE, 1997.
- [71] Riya Singh, Woojae Han, and Jont Allen. Comodulation masking release(cmr) to detect cochlear dead regions in hearing impaired ears. In *Aging and speech communication*, Bloomington, IN, 2009. Larry Humes.
- [72] Riya Singh, Woojae Han, and Jont Allen. Comodulation masking release(cmr) to detect cochlear dead regions in hearing impaired ears. In *Acoustical Soc. Am.*, San Antonio, TX, 2009. ASA.
- [73] William J. Strong and Jont B. Allen. Harvey fletcher. In Tom Rossing, editor, *ECHOS*, number 2, chapter Vol-14, pages 1,16. Acoustical Soc. of Am., 2004.
- [74] Nadeeka Yapa and Jont B. Allen. Human speech detection thresholds and pitch discrimination thresholds for narrow bands of speech in white masking noise. In *Abst. NNN*, Denver, 2007. ARO.
- [75] Yang-Soo Yoon and Jont B. Allen. Snr-loss with hearing impaired ears. In *Abst.*, Baltimore MD, 2006. ARO.
- [76] Yang-Soo Yoon and Jont B. Allen. Signal-to-noise ratio loss and consonant perception in hearing impairment under noisy environment. In *Abst.*, Lake Tahoe, 2006.
- [77] Yang-Soo Yoon, David B. Gooler, , and Jont B. Allen. Comparison of information extracted by normal hearing and hearing-impaired listeners from temporally smeared envelopes of syllables in noise. In *Abst.*, Baltimore MD, 2006. ARO.
- [78] Yang-Soo Yoon, David M. Gooler, and Jont B. Allen. The effect of noise vocoder signal processing on consonant recognition in normal hearing and hearing-impaired listeners, in noise. In *Abst.*, Lake Tahoe, 2006. IHCON.

- [79] Yang-Soo Yoon, David M. Gooler, and Jont B. Allen. Confusion of consonant recognition with temporal envelope cues alone in hearing impairment. In *Abst.*, page 1931, Minneapolis MN, 2005. ASA.

# Patents

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## References

- [1] Allen, Dorward, Johnston, and Sydorenko. Tonality for perceptual audio compression based on loudness uncertainty. *Patent #5,737,389*, 1998.
- [2] J. Allen. Method and system for ensuring royalty payments for data delivered over a telephone network utilizing ... *Patent #6744891*, 2004.
- [3] J. Allen. Method and system for ensuring royalty payments for data delivered over a network. *Patent #6,041,316(?)*, 2000.
- [4] J. Allen. A technique for determining a compression ratio for use in processing audio signals within a telecommunications system. *US Patent #5,737,389*, 1998.
- [5] J. Allen. Data over voice transmission arrangement. *U. S. Patent #4,442,540*, 1984.
- [6] J. Allen. Noise and bit rate reduction arrangements. *U. S. Patent #4,417,102*, 1983.
- [7] J. Allen. Method and apparatus for cancelling room reverberation and noise pickup. *U. S. Patent #4,066,842*, 1978.
- [8] J. Allen. Synthesis of pure speech from a reverberant signal. *U. S. Patent #3,786,188*, 1974.
- [9] J. Allen and O. Gitz. Analysis arrangement based on a model of human neural responses. *U. S. Patent #4,905,285*, 1990.
- [10] J. Allen and P. Jeng. System and method for automatically adjusting hearing aid based on acoustic reflectance. *US Patent #7,715,577; issued May 11, 2010; filed on 2/23/05*, 2010.

- [11] J. Allen and J. Songrady. Method for customer selection of telephone sound enhancement. *U.S. Patent #5,539,806*, 1996.
- [12] J. Allen and D. Youtkus. Background noise compensation in a telephone network. *U. S. Patent #5,485,515*, 1996.
- [13] J. Allen and D. Youtkus. Background noise compensation in a telephone network. *U. S. Patent #5,524,148*, 1996.
- [14] J. Allen and D. Youtkus. Background noise compensation in a telephone set. *U. S. Patent #5,526,419*, 1996.
- [15] J. Allen and D. Youtkus. Background noise compensation in a telephone set. *U. S. Patent #5,553,134*, 1996.
- [16] Saul Allen, Rahiam. Neural networks for detection of phonetic features. *Application Patent No: #00991894.7-2218-US0041649*, ATT Corp., 2002. European Patent Office customer services: +31 (0)70 340 45 00.
- [17] M. Killion, F. Waldhauer, R. Wittkowski, J.and Goode, and J. Allen. Hearing aid having plural microphones and a microphoneswitching system. *Patent #6,327,370*, 2001.
- [18] M. Killion, F. Waldhauer, R. Wittkowski, J.and Goode, and J. Allen. Hearing aid having plural microphones and a microphoneswitching system. *Patent #6,101,258*, 2000.
- [19] M. Killion, F. Waldhauer, R. Wittkowski, J.and Goode, and J. Allen. Hearing aid having plural microphones and a microphoneswitching system. *Patent #5,524,056*, 1996.