

Japanese Papers on Auditory and Brain Research (Hypersonic Effect and High Resolution Audio)

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1. Oohashi, T., Nishina, E., Kawai, N., Fuwamoto, Y., and Imai, H. "High-Frequency Sound Above the Audible Range Affects Brain Electric Activity and Sound Perception", 91st Convention of the Audio Eng. Soc., Oct 1991, convention paper 3207.
2. Oohashi, T., Nishina, E., Honda, M., Yonekura, Y., Fuwamoto, Y., Kawai, N. et.al. "Inaudible High-Frequency Sounds Affect Brain Activity: Hypersonic Effect", J. Neurophysiol., vol. 83, pp. 3548-3558, 2000.
3. Yagi, R., Nishina, E., Kawai, M., Honda T., Maekawa, T., Nakamura, S. et.al. "Auditory Display for Deep Brain Activation: Hypersonic Effect", Proc. Intl. Conf. Auditory Display 2002, pp. 248-253, 2002.
4. Oohashi, T., Nishina, E., and Honda, M. "Multidisciplinary Study on the Hypersonic Effect", Intl. Congress Series vol. 1226, pp. 27-42, 2002.
5. Yagi, R., Nishina, E., Honda, M., and Oohashi, T. "Modulatory Effect of Inaudible High-Frequency Sounds on Human Acoustic Perception", Neuroscience Letters vol. 351, pp. 191-195, 2003.
6. Yagi, R., Nishina, E., and Oohashi, T. "A Method for Behavioral Evaluation of the "Hypersonic Effect", Acoustical Sci. and Technol., Vol.24, pp. 197-200, 2003.
7. Yagi, R., Nishina, E. and Oohashi, T. "Multiparametric Evaluation of the Effects of Intensity of Inaudible High Frequency Sounds in Hypersonic Effect", Trans. Of Virtual Reality Soc. of Japan, vol. 8(2), pp. 213-220, 2003. (In Japanese)
8. Honda, M., Nakamura, S., Yagi, R., Morimoto, M., Maekawa, T., Nishina, E., et.al. "Functional Neuronal Network Subserving the Hypersonic Effect", Int. Cong. Acoustics (ICA), Kyoto, 2004.
9. Oohashi, T., Kawai, N., Nishina, E., Honda, M., Yagi, R., Nakamura, et.al. "The Role of Biological System other than Auditory Air-Conduction in the Emergence of the Hypersonic Effect", Brain Research vol. 1073-1074, pp. 339-347, 2006.
10. Oohashi, T., Nishina, E., Kawai, N., Honda, M., Yagi, R., Morimoto, M. et.al. "Biological Mechanism of Perception of Inaudible High-Frequency Component Included in Music Sounds", 3rd Intl. Sympos. on Traditional Polyphony, Tbilisi, Georgia, 2006.
11. Nishina, E. "Hypersonic Effect and its Mechanism of Emergence", J. Acoust. Soc. Japan, vol. 65, pp. 40-45, 2009. (In Japanese)
12. Honda, M., Kawai, N., Yagi, R., Fukushima, A., Ueno, O., et.al. "Electroencephalographic Index of the Activity of Functional Neural Network Subserving the Hypersonic Effect", ASIAGRAPH vol. 8, pp. 41-46, 2013. (In Japanese)

13. Kawai, T. "Hypersonic Effect Study on Sound Environment Comfort by Brain Activation", Hypersonic Scenic Science, vol.83, pp. 290-295, 2013. (In Japanese)
14. Maekawa, T., Honda, M., Nishina, E., Kawai, N., and Oohashi, T. "Structural Complexity of Sounds Necessary for the Emergence of the Hypersonic Effect: Estimation of Autocorrelation Order", Asiagraph J., vol. 8, pp. 35-40, 2013. (In Japanese)
15. Fukushima, A., Yagi, R., Kawai, N., Honda, M., Nishina, E. and Oohashi, T. "Frequencies of Inaudible High-Frequency Sounds Differentially Affect Brain Activity: Positive and Negative Hypersonic Effects", PLOS ONE, vol.9, pp. 1-8, 2014.

Shoji Ito, Toshihide Harada et.al. - Hiroshima, Japan

16. Ito, S., et.al. "Effects on the Autonomic Nervous System Function by the High-Resolution Music Box Sound", Medical Treatment and New Medicine, vol. 52, pp.382-386, 2015. (In Japanese)
17. Ito, S., Harada, T., Miyaguchi, M., Ishizaki, F., Chikamura, C. Kodama,Y. et.al. "Effect of High-Resolution Audio Music Box Sound on EEG", International Med. Jour. vol. 23(1), pp.1-3, 2016.
18. Kohsaku, N., Ito, S., Harada, T., Ishizaki, F., Yamamoto, R., Niyada, K., et.al. "Effect of High-Resolution Audio on Function of Autonomic Nervous System", International Med. Jour., vol. 23(4), pp.1-3, 2016.
19. Harada, T., Moriwaki, Y., Ito, S., Ishizaki, F., Yamamoto, R., Niyada, K., et.al. "Influences of High-Resolution Music Box Sound on the Peripheral Vascular System", International Med. Jour., vol. 23(6), pp. 709-711, 2016.
20. Ito, S., et.al. "Effects of Differences in the Number of Quantization Bits of High-Resolution Music Box Sound on Autonomic Nervous System Function", Medical Treatment and New Medicine, vol. 54, pp. 137-140, 2017. (In Japanese)
21. Miyazaki, H., Harada, T., Aonaka, J., Ishizaki, F., Kodama, Y., Ito, S. et.al. "Relationship between Autonomous Nervous Function and High-Resolution Music Box Audio", International Med. Jour., vol. 27(1), pp.13-15, 2020.
22. Miyazaki, H., Harada, T., Aonaka, J., Ishizaki, F., Kodama, Y., Ito, S. et.al. "Study on Comparison of 24 with 16 Bit Headphone High-Resolution Music Box Audio", International Med. Jour., vol. 27(1), pp. 55-57, 2020.

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23. Kuribayashi, R., Yamamoto, R., and Nittono, H. "High-Resolution Music with Inaudible High-Frequency Components Produces a Lagged Effect on Human Electroencephalographic Activities", Neuroreport. 25, pp.651-655, 2014.
24. Kuribayashi, R. and Nittono, H. "High-Resolution Audio with Inaudible High-Frequency Components Induces a Relaxed Attentional State without Conscious Awareness", Front. Psychol. vol. 8, pp. 1-12, 2017.
25. Nittono, H. "High-Frequency Sound Components of High-Resolution Audio Are Not Detected in Auditory Sensory Memory", Scientific Reports 10, no. 21740, 2020.
26. Ohwan, M. and Nittono, H. "Sampling Frequency of Digital Sound Sources Affects Psychophysiological States of Listeners", Japanese Jour. of Psychophysiol. Psychology and Psychophys., Art. 2003br, 2020. (in Japanese)

Others - A few representatives of a much broader literature mapping brain and somatic responses to audio signals at all frequencies and correlating them with centers of emotional response. References from these and the above provide an entry into this literature.

27. Iwaki, T., Hayashi, M., and Hori, T. "Changes in Alpha Band EEG Activity in the Frontal Area after Stimulation with Music of Different Affective Content", *Perceptual and Motor Skills* vol. 84, pp. 515-526, 1997.

28. Hosoi, H., Imaizumi, S. and Sakaguchi, T. "Activation of the Auditory Cortex by Ultrasound", *Lancet, Research Letters* vol. 351, pp. 496-497, 1998.

Auditory Brainstem Response

29. Koubori, M., Ashihara, K., Omata, M., Kyoso, M., and Kiryu, S. "Psycho-acoustic Measurement and Auditory Brainstem Response in the Frequency Range Between 10 kHz and 30 kHz", 129th Convention of the Audio Eng. Soc., Nov. 2010, convention paper 8294.

30. Omata, M., Ashihara, K., Kyouso, M., Koubori, M., Moriya, Y., Kyouso, M., and Kiryu, S. "A Psychoacoustic Measurement and ABR for the Sound Signals in the Frequency Range Between 10 kHz and 24 kHz", 125th Convention of the Audio Eng. Soc., Oct. 2008, convention paper 7566.

Auditory Evoked Magnetic Fields

31. Fujioka, T., Kakigi, R., Gunji, A. and Takeshima, Y. "The Auditory Evoked Magnetic Fields to Very High Frequency Tones", *Neuroscience*, vol. 112, pp. 367-381, 2002.