

LIST OF PUBLICATIONS

Vesa Välimäki (Aalto University, Espoo, Finland)

A. Peer-reviewed scientific articles

A.1. Scientific journal articles (102)

1. B. Bank, J. A. Belloch & V. Välimäki, “Efficient design of a parallel graphic equalizer,” accepted for publication in the *Journal of the Audio Engineering Society*, Apr. 2017.
2. F. Stevens, D. T. Murphy, L. Savioja & V. Välimäki, “Modeling sparsely reflecting outdoor acoustic scenes using the waveguide web,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 25, no. 8, pp. 1566–1578, Aug. 2017.
3. S. Bilbao, F. Esqueda, J. D. Parker & V. Välimäki, “Antiderivative antialiasing for memoryless nonlinearities,” *IEEE Signal Processing Letters*, vol. 24, no. 7, pp. 1049–1053, July 2017.
4. V. Välimäki, B. Holm-Rasmussen, B. Alary & H.-M. Lehtonen, “Late reverberation synthesis using filtered velvet noise,” *Applied Sciences*, vol. 7, no. 5, paper no. 483, May 2017.
5. V. Välimäki & J. Liski, “Accurate cascade graphic equalizer,” *IEEE Signal Processing Letters*, vol. 24, no. 2, pp. 176–180, Feb. 2017.
6. J. A. Belloch, A. Gonzalez, E. S. Quintana-Ortí, M. Ferrer & V. Välimäki, “GPU-based dynamic wave field synthesis using fractional delay filters and room compensation,” accepted for publication in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 25, no. 2, pp. 435–447 Feb. 2017.
7. F. Esqueda, S. Bilbao & V. Välimäki, “Aliasing reduction in clipped signals,” *IEEE Transactions on Signal Processing*, vol. 64, no. 20, pp. 5255–5267, Oct. 15, 2016.
8. V. Välimäki & J. D. Reiss, “All about audio equalization: Solutions and frontiers,” *Applied Sciences*, vol. 6, no. 5, paper no. 129, 2016. Open Access paper: <http://www.mdpi.com/2076-3417/6/5/129>.
9. V. Välimäki, A. Franck, J. Rämö, H. Gamper & L. Savioja, “Assisted listening using a headset – Enhancing audio perception in real, augmented, and virtual environments,” *IEEE Signal Processing Magazine*, vol. 32, no. 2, pp. 92–99, Mar. 2015.
10. J. Rämö, B. Bank & V. Välimäki, “High-precision parallel graphic equalizer,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 22, no. 12, pp. 1894–1904, Dec. 2014.
11. S. D’Angelo & V. Välimäki, “Generalized Moog ladder filter: Part II – Explicit nonlinear model through a novel delay-free loop implementation method,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 22, no. 12, pp. 1873–1883, Dec. 2014.
12. S. D’Angelo & V. Välimäki, “Generalized Moog ladder filter: Part I – Linear analysis and parameterization,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 22, no. 12, pp. 1825–1832, Dec. 2014.
13. J. Timoney, J. Pekonen, V. Lazzarini & V. Välimäki, “Dynamic signal phase distortion using coefficient-modulated allpass filters,” *Journal of the Audio Engineering Society*, Vol. 62, no. 9, pp. 596–610, Sept. 2014.
14. J. Rämö & V. Välimäki, “Optimizing a high-order graphic equalizer for audio processing,” *IEEE Signal Processing Letters*, vol. 21, no. 3, pp. 301–305, Mar. 2014.
15. A. Franck & V. Välimäki, “Higher-order integrated wavetable and sampling synthesis,” *Journal of the Audio Engineering Society*, vol. 61, no. 9, pp. 624–636, Sept. 2013.
16. J. Parker & V. Välimäki, “Linear dynamic range reduction of musical audio using an allpass filter chain,” *IEEE Signal Processing Letters*, vol. 20, no. 7, pp. 669–672, July 2013.

17. L. Gabrielli, V. Välimäki, H. Penttinen, S. Squartini & S. Bilbao, “A digital waveguide based approach for Clavinet modeling and synthesis,” *EURASIP Journal on Applied Signal Processing*, vol. 2013, no. 1, 2013.
18. V. Välimäki, H.-M. Lehtonen & M. Takanen, “A perceptual study on velvet noise and its variants at different pulse densities,” *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 21, no. 7, pp. 1481–1488, July 2013.
19. S. D’Angelo, J. Pakarinen & V. Välimäki, “New family of wave-digital triode models,” *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 21, no. 2, pp. 313–321, Feb. 2013.
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21. H.-M. Lehtonen, J. Pekonen & V. Välimäki, “Audibility of aliasing distortion in sawtooth signals and its implications for oscillator algorithm design,” *Journal of the Acoustical Society of America*, vol. 132, no. 4, pp. 2721–2733, Oct. 2012.
22. R. C. D. Paiva, S. D’Angelo, J. Pakarinen & V. Välimäki, “Emulation of operational amplifiers and diodes in audio distortion circuits,” *IEEE Transactions on Circuits and Systems – II: Express Briefs*, vol. 59, no. 10, pp. 688–692, Oct. 2012.
23. J. Rämö & V. Välimäki, “Digital augmented reality audio headset,” *Journal of Electrical and Computer Engineering*, special issue on “Immersive Speech and Audio Communication,” vol. 2012, Article ID 457374, 13 pages Oct. 2012. Available online at <http://www.hindawi.com/journals/jece/2012/457374/>.
24. V. Välimäki, J. D. Parker, L. Savioja, J. O. Smith & J. S. Abel, “Fifty years of artificial reverberation,” *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 20, no. 5, pp. 1421–1448, July 2012.
25. K.-S. Lee, J. S. Abel, V. Välimäki, T. Stilson & D. P. Berners, “The switched convolution reverberator,” *Journal of the Audio Engineering Society*, vol. 60, no. 4, pp. 227–236, April 2012.
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27. J. Pekonen, J. Nam, J. O. Smith & V. Välimäki, “Optimized polynomial spline basis function design for quasi-bandlimited classical waveform synthesis,” *IEEE Signal Processing Letters*, vol. 19, no. 3, pp. 159–162, Mar. 2012.
28. J. Kleimola & V. Välimäki, “Reducing aliasing from synthetic audio signals using polynomial transition regions,” *IEEE Signal Processing Letters*, vol. 19, no. 2, pp. 67–70, Feb. 2012.
29. V. Välimäki, J. Pekonen & J. Nam, “Perceptually informed synthesis of bandlimited classical waveforms using integrated polynomial interpolation,” *Journal of the Acoustical Society of America*, vol. 131, no. 1, pt. 2, pp. 974–986, Jan. 2012.
30. N. Lindroos, H. Penttinen & V. Välimäki, “Parametric electric guitar synthesis,” *Computer Music Journal*, vol. 35, no. 3, pp. 18–27, Fall 2011.
31. A. Pérez Carrillo, J. Bonada, J. Pätynen & V. Välimäki, “Method for measuring violin sound radiation based on bowed glissandi and its application to sound synthesis,” *Journal of the Acoustical Society of America*, vol. 130, no. 2, pp. 1020–1029, Aug. 2011.
32. J. Pakarinen, V. Välimäki, F. Fontana, V. Lazzarini & J. S. Abel, “Recent advances in real-time musical effects processing and synthesis,” *EURASIP Journal on Advances in Signal Processing*, vol. 2011, article ID 940784, 15 pages, 2011.
33. R. C. D. de Paiva, J. Pakarinen, V. Välimäki & M. Tikander, “Real-time audio transformer emulation for virtual tube amplifiers,” *EURASIP Journal on Advances in Signal Processing*, vol. 2011, article ID 347645, 15 pages, 2011.

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36. L. Savioja, V. Välimäki & J. O. Smith, “Audio signal processing using graphics processing units,” *Journal of the Audio Engineering Society*, vol. 59, no. 1/2, pp. 3–19, Jan./Feb. 2011.
37. V. Välimäki, J. Parker & J. S. Abel, “Parametric spring reverberation effect,” *Journal of the Audio Engineering Society*, vol. 58, no. 7/8, pp. 547–562, July/Aug. 2010.
38. N. Lee, J. O. Smith & V. Välimäki, “Analysis and synthesis of coupled vibrating strings using a hybrid modal-waveguide synthesis model,” *IEEE Transactions on Audio, Speech and Language Processing*, vol. 18, no. 4, pp. 833–842, May 2010.
39. J. Nam, V. Välimäki, J. S. Abel & J. O. Smith, “Efficient antialiasing oscillator algorithms using low-order fractional delay filters,” *IEEE Transactions on Audio, Speech and Language Processing*, vol. 18, no. 4, pp. 773–785, May 2010.
40. V. Välimäki, J. Nam, J. O. Smith & J. S. Abel, “Alias-suppressed oscillators based on differentiated polynomial waveforms,” *IEEE Transactions on Audio, Speech and Language Processing*, vol. 18, no. 4, pp. 786–798, May 2010.
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42. H.-M. Lehtonen, A. Askenfelt & V. Välimäki, “Analysis of the part-pedaling effect in the piano,” *Journal of the Acoustical Society of America Express Letters*, vol. 126, no. 2, pp. EL49–EL54, Aug. 2009.
43. V. Välimäki, J. S. Abel & J. O. Smith, “Spectral delay filters,” *Journal of the Audio Engineering Society*, vol. 57, no. 7/8, pp. 521–531, July/Aug. 2009.
44. R. Milovanov, M. Huotilainen, P. A. A. Esquef, V. Välimäki & M. Tervaniemi, “The role of musical aptitude and language skills in preattentive duration determination in school-aged children,” *Neuroscience Letters*, vol. 460, no. 2, pp. 161–165, 28 Aug. 2009.
45. J. Rauhala, M. Laurson, V. Välimäki, V. Norilo & H.-M. Lehtonen, “Parametric piano synthesizer,” *Computer Music Journal*, vol. 32, no. 4, pp. 17–30, Winter 2008.
46. J. Pakarinen, T. Puputti & V. Välimäki, “Virtual slide guitar,” *Computer Music Journal*, vol. 32, no. 3, pp. 42–54, Fall 2008.
47. H.-M. Lehtonen, V. Välimäki & T. I. Laakso, “Canceling and selecting partials from musical tones using fractional-delay filters,” *Computer Music Journal*, vol. 32, no. 2, pp. 43–56, Summer 2008. Invited paper.
48. V. Välimäki, S. González, O. Kimmelma & J. Parviainen, “Digital audio antiquing—Signal processing methods for imitating the sound quality of historical recordings,” *Journal of the Audio Engineering Society*, vol. 56, no. 3, pp. 115–139, Mar. 2008.
49. R. Milovanov, M. Huotilainen, V. Välimäki, P. Esquef & M. Tervaniemi, “Musical aptitude and second language pronunciation skills in school-aged children: neural and behavioral evidence,” *Brain Research*, vol. 1194, no. 15 February 2008, pp. 81–89, Feb. 2008.
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51. V. Välimäki & A. Haghparast, “Fractional delay filter design based on truncated Lagrange interpolation,” *IEEE Signal Processing Letters*, vol. 14, no. 11, pp. 816–819, Nov. 2007.

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55. J. Rauhala, H.-M. Lehtonen & V. Välimäki, “Toward next-generation digital keyboard instruments,” *IEEE Signal Processing Magazine*, vol. 24, no. 2, pp. 12–20, Mar. 2007.
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60. J. Rauhala & V. Välimäki, “Tunable dispersion filter design for piano synthesis,” *IEEE Signal Processing Letters*, vol. 13, no. 5, pp. 253–256, May 2006.
61. V. Välimäki, J. Pakarinen, C. Erkut & M. Karjalainen, “Discrete-time modeling of musical instruments,” *Reports on Progress in Physics*, vol. 69, no. 1, pp. 1–78, Jan. 2006. Invited paper.
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63. J. Pakarinen, V. Välimäki & M. Karjalainen, “Physics-based methods for modeling nonlinear vibrating strings,” *Acta Acustica united with Acustica*, vol. 91, no. 2, pp. 312–325, Mar./Apr. 2005. Special issue on string instruments.
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66. H. Penttinen & V. Välimäki, “A time-domain approach to estimating the plucking point of guitar tones obtained with an under-saddle pickup,” *Applied Acoustics*, vol. 65, no. 12, pp. 1207–1220, Dec. 2004. Special issue on musical acoustics.
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69. E. Brattico, M. Tervaniemi, V. Välimäki, T. van Zuijen & I. Peretz, “Cortical correlates of acquired deafness to dissonance,” *Annals of the New York Academy of Sciences*, vol. 999, pp. 158–160, Dec. 2003.
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85. L. Savioja & V. Välimäki, “Multiwarping for enhancing the frequency accuracy of digital waveguide mesh simulations,” *IEEE Signal Processing Letters*, vol. 8, no. 5, pp. 134–136, May 2001.
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A.4. Articles in refereed scientific edited volumes and conference proceedings (170)

1. B. Alary, A. Politis & V. Välimäki, “Velvet-noise decorrelator,” accepted for publication in Proc. 20th Int. Conf. Digital Audio Effects (DAFx-17), Edinburgh, UK, Sept. 2017.
2. F. Esqueda, H. Pöntynen, V. Välimäki & J. D. Parker, “Virtual analog Buchla 259 wavefolder,” accepted for publication in Proc. 20th Int. Conf. Digital Audio Effects (DAFx-17), Edinburgh, UK, Sept. 2017.
3. J. Liski & V. Välimäki, “The quest for the best graphic equalizer,” accepted for publication in Proc. 20th Int. Conf. Digital Audio Effects (DAFx-17), Edinburgh, UK, Sept. 2017.
4. J. Liski, S. Vesa, R. Väänänen & V. Välimäki, “Real-time adaptive equalization for headphone listening,” accepted for publication in Proc. 25th European Signal Processing Conf. (EUSIPCO-17), Kos, Greece, Aug. 2017.

5. F. Esqueda, S. Bilbao & V. Välimäki, “Eliminating aliasing caused by discontinuities using integrals of the sinc function,” in *Proc. Int. Symp. Musical and Room Acoustics (ISMRA-2016)*, La Plata, Argentina, Sept. 2016.
6. F. Esqueda, S. Bilbao & V. Välimäki, “Antialiased soft clipping using a polynomial approximation of the integrated bandlimited ramp function,” in *Proc. 22nd Int. Congr. Acoust. (ICA-2016)*, Buenos Aires, Argentina, Sept. 2016.
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9. J. Liski, R. Väänänen, S. Vesa & V. Välimäki, “Adaptive equalization of acoustic transparency in an augmented-reality headset,” in *Proc. AES Int. Conf. Headphone Technology*, Aalborg, Denmark, Aug. 2016.
10. F. Esqueda, V. Välimäki & S. Bilbao, “Antialiased soft clipping using an integrated bandlimited ramp,” in *Proc. European Signal Processing Conference (EUSIPCO-16)*, Budapest, Hungary, Aug. 2016.
11. J. A. Belloch & V. Välimäki, “Efficient target-response interpolation for a graphic equalizer,” in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP-16)*, pp. 564–568, Shanghai, China, Mar. 2016.
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E. Publications intended for the general public (5)

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G. Thesis

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