## **PUBLICATIONS – Christopher J. Struck**

- [1] ANSI S3.22-202x, "American National Standard Specification of Hearing Aid Characteristics", C. J. Struck, Working Group Vice Chair and Project Leader.
- [2] ANSI S1.42-2023: Design Response Of Weighting Networks For Acoustical Measurements," C. J. Struck, Working Group Chair.
- [3] IEC 60268-24:2023 Ed.1, "Sound system equipment Part 24: Headphones and earphones Active acoustic noise cancelling characteristics", C. J. Struck, TC 100/TA20 Working Group Member.
- ISO 532-3:2023 "Acoustics: Methods for calculating loudness Part 3: Moore-Glasberg-Schlittenlacher method", C. J. Struck, Working Group 9 Member
- [5] IEC 60118-0:2022: "Electroacoustics Hearing aids Part 0: Measurement of the performance characteristics of hearing aids", C. J. Struck, TC 29 Working Group 13 Member.
- [6] IEC 60318-8:2022: "Electroacoustics Simulators of human head and ear Part 8: Acoustic coupler for high-frequency measurements of hearing aids and earphones coupled to the ear by means of ear inserts", TC 29/Working Group 21 Member.
- [7] IEC 60318-7:2022: "Electroacoustics Simulators of human head and ear Part 7: Head and torso simulator for the measurement of air-conduction hearing aids", C. J. Struck, TC 29/Working Group 21 Member.
- [8] C. J. Struck, "A Proposal For A New 1/3 Octave Band Noise Criteria", presented at the Acous. Soc. of Am. 181<sup>st</sup> Meeting in Seattle, WA (29 Nov. – 3 Dec. 2021), Proc. Of Meetings on Acous., Dec. 2021 <u>https://doi.org/10.1121/2.0001518</u>
- [9] ISO 11904-2:2021 "Acoustics: Determination of sound immission from sound sources placed close to the ear Part 2: Technique using a manikin", C.J. Struck, Technical Editor.
- [10] ANSI S3.35-2021, "American National Standard Method of Measurement of Performance Characteristics of Hearing Aids Under Simulated Real-Ear Working Conditions", C. J. Struck, S3WG48 Project Leader.
- [11] IEC 60263:2020/ANSI S1.22-2021: "Scales and sizes for plotting frequency characteristics and polar diagrams", C. J. Struck, IEC TC 29/MT-25 Convenor.
- [12] C. J. Struck, "Phase, Group Delay, and Impulse Response: A Quick Primer", Voice Coil, Vol. 34, No. 2 (2020 December).
- [13] IEC 60268-16:2020, "Sound system equipment Part 16: Objective rating of speech intelligibility by speech transmission index", C. J. Struck, TC 100/TA20 Maintenance Team Member.
- [14] IEC 60268-22:2020, "Sound system equipment Part 22: Electrical and mechanical measurements on transducers", C. J. Struck, TC 100/TA20 Working Group Member.
- [15] C. J. Struck, "Improved Zobel Network", Voice Coil, Vol. 33, No. 5 (2020 March).
- [16] C. J. Struck, "Objective Measurements of Headphone Active Noise Cancelation Performance", proceedings of the Audio Engineering Society International Conference on Headphone Technology – San Francisco, CA (2019 August 27–29).
- [17] C. J. Struck, "Electroacoustic Measurements of Headphones", Voice Coil, Vol. 32, No. 9 (2019 July).
- [18] S. Blaeser, C. J. Struck, "A History of ASA Standards", J. Acous. Soc. America, 145, 77 (2019). https://doi.org/10.1121/1.5080329
- [19] IEEE 260.4-2019/ASA S1.45-2020, "Standard for Letter Symbols and Abbreviations for Quantities Used in Acoustics", C. J. Struck, Working Group Member and Technical Editor.
- [20] IEC 60268-4:2018, "Sound system equipment Part 4: Microphones", C. J. Struck, AES TC 100/TA20 Liaison Group Member.
- [21] C. J. Struck, "The Efficiency Bandwidth Product for Loudspeaker Drivers", Voice Coil, Vol. 31, No. 5 (2018 March).

- [22] IEC 60268-21:2018, "Sound system equipment Part 21: Acoustical (output-based) measurements", C. J. Struck, TC 100/TA20 Working Group Member.
- [23] C. J. Struck, "Measurement Uncertainty and its Application to Standards in Acoustics", presented at the Acoustical Society of America 174<sup>th</sup> Meeting (INVITED) in New Orleans, LA (4-8 December 2017), Proc. Of Meetings on Acous., April 2017 <u>https://doi.org/10.1121/2.0000775</u>
- [24] ISO 532-2:2017 "Acoustics: Methods for calculating loudness Part 2: Moore-Glasberg method", C. J. Struck, Working Group 9 Member.
- [25] C. J. Struck, "An Overview of ANSI S3.7-2016: Method for Measurement and Calibration of Earphones", presented at the Acoustical Society of America 174<sup>th</sup> Meeting (INVITED) in New Orleans, LA (4-8 December 2017).
- [26] C. J. Struck, "Why Is Headphone Audio So Poor, and What Can Be Done About It?", Keynote address and paper, Proceedings of the 6<sup>th</sup> International Symposium on Electroacoustic Technologies, Shenzhen, China, (4-5 November 2017).
- [27] C. J. Struck, "*Master Class: Design of a Small 2-Way Ported Loudspeaker*", presented at the 6<sup>th</sup> International Symposium on Electroacoustic Technologies, Shenzhen, China, (4-5 November 2017).
- [28] C. J. Struck, "Standards Program of the Acoustical Society of America", Acoustics Today, Vol. 13, Issue 3, Fall 2017. http://tinyurl.com/bdex95f8
- [29] C. J. Struck and L. Prusick, "Comparison of Real-World Bandwidth in Hearing Aids vs. Earlens Light-Driven Hearing Aid System", Hearing Review, Vol. 24, No. 3, pp. 24-29, 2017.
- [30] C. J. Struck, "A, B, & C Weighting and Their Relationship to the Equal Loudness Contours", Voice Coil, Vol. 30, No. 5 (2017 March).
- [31] IEC 61094-5:2016: "Electroacoustics Measurement microphones Part 5: Methods for pressure calibration of working standard microphones by comparison", C. J. Struck, IEC TC 29/Working Group 5 Member.
- [32] IEC 61094-3:2016: "Electroacoustics Measurement microphones Part 3: Primary method for free-field calibration of laboratory standard microphones by the reciprocity technique", IEC TC 29/C. J. Struck, Working Group 5 Member.
- [33] IEC TS 62886:2016: "Electroacoustics Hearing aids Method for measuring electroacoustic performance up to 16 kHz", C. J. Struck, IEC TC 29/Working Group 13 Member.
- [34] C. J. Struck, "*Refinements in the Electroacoustic Testing of Headphones*", proceedings of the Audio Engineering Society International Conference on Headphone Technology Aalborg, Denmark (2016 August 24–26).
- [35] C. J. Struck, "Opportunities for International Liaison: Acoustical Noise Standards for the New Millennium", InterNoise 2016 Hamburg, Germany (2016 August 21-24).
- [36] ANSI S3.7-2016, "American National Standard Method for Measurement and Calibration of Earphones", C. J. Struck, Working Group S3WG37 Chair.
- [37] IEEE 1652-2016, "Standard for Translating Head and Torso Simulator Measurements from Eardrum to Other Acoustic Reference Points", C. J. Struck, IEEE Working Group on Communications Electroacoustics Member.
- [38] ANSI/ASA S1.6-2016, "American National Standard Preferred Frequencies and Filter Band Center Frequencies for Acoustical Measurements", C. J. Struck, Working Group S1WG29 Member.
- [39] C. J. Struck, "Boundary Effects on Sources at Low Frequencies", Voice Coil, Vol. 29, No. 9 (2016 July).
- [40] C. J. Struck, "Hearing Instruments: Innovation, Challenges, and Standards" (INVITED), presented at the FDA Public Workshop
  – Streamlining Good Manufacturing Practices for Hearing Aids (21 April 2016).
- [41] ANSI S3.20-2015, "American National Standard Bioacoustical Terminology", C. J. Struck, Working Group S3WG73 Chair.

- [42] C. J. Struck and S. F. Temme, "Headphone Response: Target Equalization Trade-offs and Limitations", presented at the Audio Engineering Society 139<sup>th</sup> Convention – New York, NY (2015 October 29 – November 1).
- [43] C. J. Struck, "An Overview of the ANSI/ASA Standards Program", InterNoise 2015 San Francisco, CA (2015 August 9-12). Reprinted in Sound & Vibration – 2015 December.
- [44] C. J. Struck, "Free Plus Diffuse Sound Field Target Earphone Response Derived from Classical Room Acoustics Theory", presented at the Audio Engineering Society 135<sup>th</sup> Convention New York, NY (2013 October 17-20).
- [45] C. J. Struck, "Calibrating for Loudspeaker Impedance Measurements", The 2013 Loudspeaker Industry Sourcebook, Segment LLC, publishers of Voice Coil, (2013 July 15).
- [46] ANSI S3.36-2012, "American National Standard Specification for a Manikin for Simulated in-situ Airborne Acoustic Measurements", C. J. Struck, Working Group S3WG67 Chair.
- [47] C. J. Struck, "Modern Tools for the Development of Acoustical Standards", presented at the Acoustical Society of America 162<sup>nd</sup> Meeting (INVITED) – San Diego, CA (2011 October 31 – November 4). Reprinted in Acoustics Today, 2012 January. http://tinyurl.com/yz32v496
- [48] C. J. Struck, "ZFIT: A MATLAB Tool for Thiele-Small Parameter Fitting and Optimization", presented at the Audio Engineering Society 129<sup>th</sup> Convention – San Francisco, CA (2010 November 4-7).
- [49] IEEE 269-2010, "Standard Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets", C. J. Struck, IEEE Subcommittee on Telecommunications Instrument Testing Member.
- [50] IEEE 1329-2010, "Standard for Measuring Transmission Performance of Speakerphones", C. J. Struck, IEEE Subcommittee on Telecommunications Instrument Testing Member.
- [51] ANSI S3.25-2009, "American National Standard for an Occluded Ear Simulator", C. J. Struck, Working Group S3WG37 Chair.
- [52] C. J. Struck, D. Foley, "Ensuring Accurate Playback and Analysis Of Binaural Recordings For Automotive Systems", presented at the Audio Engineering Society 36<sup>th</sup> International Conference – Dearborn, MI (2009 June 2-4).
- [53] C. J. Struck, K. Thorborg, A. Unruh, "An Improved Electrical Equivalent Circuit Model for Dynamic Moving Coil Transducers", presented at the Audio Engineering Society 122<sup>nd</sup> Convention – Vienna (2007 May 5-8).
- [54] C. J. Struck, R. Little, A. Unruh, A. Jabbari, and J. P. Axelsson "An Extended Small Signal Parameter Loudspeaker Model for the Linear Array Transducer", presented at the Audio Engineering Society 121st Convention – San Francisco, CA (2006 October 5-8).
- [55] C. J. Struck, A. Unruh, "Linear Array Transducer Technology", presented at the Audio Engineering Society 121<sup>st</sup> Convention San Francisco, CA (2006 October 5-8).
- [56] C. J. Struck, "An Artificial Diffuse Field for In-Situ Microphone Measurements" (INVITED), presented at the NOISECON/Acoustical Society of America 150<sup>th</sup> Meeting – Minneapolis, MN (2005 October 17-21).
- [57] C. J. Struck, C. Chabanne, N. Saint-Arnaud, "A New Low-Latency, Discrete Multichannel Virtualization Technique", presented at the Audio Engineering Society 24<sup>th</sup> International Conference – Banff, Canada (2003 June 26-28).
- [58] C. J. Struck, L. Olson, and H. Müsch, "Digital Solutions for Feedback Control", The Hearing Review, Vol. 8, No. 5, 2001 May.
- [59] C. J. Struck, "Simulated Diffuse Field Measurements", presented at the Audio Engineering Society 107<sup>th</sup> Convention New York, NY (1999 September 26-29).
- [60] C. J. Struck, "Signal Processing for Improving Speech Perception in Noise", presented at the 11<sup>th</sup> Annual Convention of the American Academy of Audiology Miami Beach, FL (1999 April 28 May 2).
- [61] C. J. Struck and Z. Ribic, "Measurements of Level-Dependent Small Microphone Systems", presented at the Audio Engineering Society 105<sup>th</sup> Convention - San Francisco, (1998 September 26-29).

- [62] C. J. Struck and B.W. Edwards, "Measurement Techniques for Digital Signal Processing Hearing Aids", presented at the Audio Engineering Society 105<sup>th</sup> Convention - San Francisco, (1998 September 26-29).
- [63] C. J. Struck, B. W. Edwards, P. Dharan, and Z. Hou, "Signal Processing Algorithms for A New Software-Based Digital Hearing Device", Hearing Journal, Vol. 52, No. 9, 1998 September.
- [64] C. J. Struck B. W. Edwards, P. Dharan, and Z. Hou, "New Digital Signal Processor for Hearing Loss Based on the Auditory System", Hearing Journal, Vol. 51, No. 8, 1998 August.
- [65] C. J. Struck, "*Characterization of Directional Hearing Devices*", presented at the 10<sup>th</sup> Annual Convention of the American Academy of Audiology Los Angeles, (1998 April 2-5).
- [66] C. J. Struck and B.W. Edwards, "Device Characterization Techniques for Digital Hearing Aids", presented at the 3<sup>rd</sup> Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan – Honolulu, (1996 December 2-6).
- [67] C. J. Struck, Z. Hou, and C.V. Pavlovic, "A Prescription for Non-linear Hearing Aids Using Speech Intelligibility and Loudness Models", presented at the 3<sup>rd</sup> Joint Meeting of the ASA and the Acoustical Society of Japan - Honolulu, (1996 December 2-6).
- [68] IEEE 1027-1996, "Standard Method for Measurement of the Magnetic Field in the Vicinity of a Telephone Receiver", C. J. Struck, IEEE Subcommittee on Telecommunications Instrument Testing Member.
- [69] C. J. Struck, D. R. Schwind, and A. P. Nash, "The Early Sound Field In Performance Halls", presented at the Audio Engineering Society 99<sup>th</sup> Convention - New York, (1995 October 6-9).
- [70] C. J. Struck and S. F. Temme, "Simulated Free Field Measurements", Journal of the Audio Engineering Society, Vol. 42, No. 6, 1994 June.
- [71] C. J. Struck, "Electroacoustic Measurements on Telephones", Brüel & Kjær Lecture Note, (1993 December).
- [72] C. J. Struck and S. F. Temme, "A Comparison of Techniques for Evaluation of Loudspeakers at Low Frequencies", presented at the Audio Engineering Society 95<sup>th</sup> Convention - New York, (1993 October 7-10).
- [73] C. J. Struck, "Presentation and Interpretation of Loudspeaker Measurement Results", presented at the Audio Engineering Society 94<sup>th</sup> Convention - Berlin, (1993 March 16-19).
- [74] C. J. Struck, "Applications of Modern Sine-Based Measurement Algorithms in Electroacoustics", presented at the NOBIM-NORSIG Conference – Lillehammer, Norway (1993 February 19-20).
- [75] C. J. Struck, "An Adaptive Scan Algorithm for Fast Response Measurements", presented at the Audio Engineering Society 91<sup>st</sup> Convention - New York, (1991 October 4-8).
- [76] C. J. Struck and C. H. Biering, "A New Technique for Fast Response Measurements Using Linearly Swept Sine Excitation", presented at the Audio Engineering Society 90<sup>th</sup> Convention Paris, (1991 February 19-22).
- [77] C. J. Struck, "Investigation of the Nonrigid Behavior of a Loudspeaker Diaphragm Using Modal Analysis", Journal of the Audio Engineering Society, Vol. 38, No. 9, 1990 September. Selected for the AES "Loudspeakers Anthology, Vol. 4," 1995.
- [78] C. J. Struck, "Measuring the Nonrigid Behavior of a Loudspeaker Diaphragm using Modal Analysis", Brüel & Kjær Application Note, 1990 April.
- [79] C. J. Struck, "Evaluation of Headphone Performance with a Head And Torso Simulator", presented at the 13<sup>th</sup> International Congress on Acoustics Zagreb, (1989 August 24-31).
- [80] C. J. Struck, K. Baden-Kristensen, and O. Z. Pedersen, "On the Measurement of The Insertion Gain of Audio Communication Systems Using Head And Torso Simulators", Fortschritte der Akustik - Plenarvorträge und Kurzreferate der 15. Gemeinschaftstagung der Deutchen Arbeitsgemeinschaft für Akustik DAGA '89 - Düisberg, (1989 March 13-16).
- [81] C. J. Struck, "Determination of the Thiele-Small Parameters Using Two-Channel FFT Analysis", Brüel & Kjær Application Note, 1988 May - presented at the Audio Engineering Society 82<sup>nd</sup> Convention - London, (1987 March 10-13).