

INMETRO - DIVISION OF ACOUSTICS AND VIBRATION METROLOGY**LIST OF TECHNICAL PUBLICATIONS IN THE PERIOD 2017 – 2021****ELECTROACOUSTICS:**

- MILHOMEM, T.A.B.; SOARES, Z.M.D.; “**Measurement Microphones: Working principle and main characteristics**”, In: Proc. of the 11º Congresso Brasileiro de Metrologia, 18-21 October 2021 (In Portuguese: Microfones de medição: princípio de funcionamento e principais características).
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; RIPPER, G.P.; HANES, P.; SOLANO, A.; SERRANO, F.A.; GUEVARA, G.M.; AYALA, J.P.; “**Distortion measurements of sound pressure level generated by a pistonphone**”; In: Proc. InterNoise 2021, 1-5 August, Washington DC.
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; RIPPER, G.P.; AYALA, J.P.; GUEVARA, G.M.; SERRANO, F.A.; SOLANO, A.; WAGNER, R.P. AND HANES, P.; “**Final report on supplementary regional comparison SIM.AUV.A-S2: calibration of pistonphone**”, Metrologia, Volume 57, Number 1A, 2020. <https://doi.org/10.1088/0026-1394/57/1A/09002>.
- SOARES, Z.M.D.; SILVA, I.F.C.; ESPIRITO-SANTO, N.M.; “**Maximum Measurement Uncertainty: Hearing Aids**”. In: Proc. of the 23rd International Congress on Acoustics (ICA 2019), 09-13 September 2019, Aachen, Germany.
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; “**Experimental determination of the difference between diffuse and pressure field sensitivities of half-inch laboratory standard microphones**”. In: Proc. of 48th International Congress and Exhibition on Noise Control Engineering (Internoise 2019), 16-19 June 2019, Madrid, Spain.
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; MUSAFIR, R.E.; MÜLLER, S.; “**Diffuse-field reciprocity calibration of half-inch laboratory standard microphones using simultaneous reverberation time measurement**”. The Journal of the Acoustical Society of America 143, 3658 (2018); doi: 10.1121/1.5043395.
- SOARES, Z.M.D.; MASSON, Z.N.; PAUL, S.; “**Quality assurance of hearing aids in Brazil**”, In: Proc. of SOBRAC 2018, paper #83853, 3-5 October 2018, Porto Alegre, Brazil (In Portuguese: Garantia da Qualidade dos Aparelhos de Amplificação Sonora Individual no Brasil).
- PINTO, E.B.; SOARES, Z.M.D.; “**Periodic verification of Sound Level Meters: Acoustic performance of frequency weighting**”, In: Proc. of SOBRAC 2018, paper #84015, 3-5 October 2018, Porto Alegre, Brazil (In Portuguese: Verificação Periódica de Sonômetros: Desempenho Acústico da Ponderação em Frequência).
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; “**Microphone calibration in infrasonic frequencies**”, In: Proc. of SOBRAC 2018, paper #83320, 3-5 October 2018, Porto Alegre, Brazil (In Portuguese: Calibração de Microfones em Frequências Infrassônicas).
- MILHOMEM, T.A.B.; SOARES, Z.M.D.; “**Proficiency test on the calibration of sound level meter sets - PEP 001/2014**”, In: Proc. of SOBRAC 2018, paper #83321, 3-5 October 2018, Porto Alegre, Brazil (In Portuguese: Ensaio de Proficiência na Calibração de Sonômetros e Dispositivos que o Acompanham – PEP 001/2014).
- MILHOMEM, T.; SOARES, Z.M. D.; MUSAFIR, R.; MULLER, S.; “**Electrical crosstalk subtraction for free field reciprocity calibration of half inch laboratory standard microphones**”. The Journal of the Acoustical Society of America 141, 3132 (2017); doi: 10.1121/1.4983005.
- MASSON, Z.N.; BRESCIANI, E.C.; PAUL, S.; CORDIOLI, J.A.; SOARES, Z., ESPIRITO SANTO, N.M.; “**Bilateral comparison of hearing aids electroacoustics**”

performance results according to ABNT NBR IEC 60118-8:2014”, In: Proc. of SOBRAC 2017, XXVII Encontro da Sociedade Brasileira de Acústica, May 2017, Brasília-DF (In Portuguese: Comparação bilateral de resultados de performance eletroacústica de um aparelho de amplificação sonora individual segundo a ABNT NBR IEC 60118-8:2014).

- KLING, C.; FEDTKE, T.; SOARES, Z.; MILHOMEM, T.; “**Metrology for infrasound measurements**”. In: Proc. of the 24th International Congress on Sound and Vibration - ICSV24, July 2017, London, UK.
- KLING, C.; WIECZOREK, J.; MILHOMEM, T.; SOARES, Z.; “**An Investigation on Microphone Calibration at Infrasound Frequencies**”. Internal Report - Bilateral Project for Strengthening the Quality Infrastructure for Renewable Energies and Energy Efficiency in Brazil, Technical cooperation between PTB and Inmetro, 2017.

ACOUSTICAL TESTING:

- MASSARANI, P.M.; VILLELA, R.; PAZOS, D.; “**Measurement of Diffuse-Field Sound Absorption Coefficient of Materials Using the Two Microphones Method**”. In: Proc. of the 23rd International Congress on Acoustics (ICA 2019), 09-13 September 2019, Aachen, Germany.
- MASSARANI, P.M.; VILLELA, R.L.A.; PAZOS, D.F.P.; “**Estimation of sound absorption coefficient by diffuse incidence using the 2 microphone method**”, In: Proc. of XXVIII Encontro Nacional da Sociedade Brasileira de Acústica - SOBRAC 2018, paper #83685, 3-5 October 2018, Porto Alegre, Brazil (In Portuguese: Estimativa de Absorção Sonora por Incidência Difusa Utilizando o Método dos dois Microfones).
- PAZOS, D.F.P.; “**Medição da reflexão sonora de superfícies corrugadas com o método de dois microfones**”. In: Proc. of SOBRAC 2017, XXVII Encontro da Sociedade Brasileira de Acústica, May 2017, Brasília-DF.
- MASSARANI, P.M.; “**Análise de erros no domínio do tempo em medições de absorção pelo método de dois microfones**”. In: Proc. of SOBRAC 2017, XXVII Encontro da Sociedade Brasileira de Acústica, May 2017, Brasília-DF.
- VILLELA, R.L.A.; “**Valoração do Custo Social do Ruído Ambiental de Sistemas de Transporte**”. In: Proc. of SOBRAC 2017, XXVII Encontro da Sociedade Brasileira de Acústica, May 2017, Brasília-DF.

VIBRATION:

- RIPPER, G.P.; DIAS, R.S.; MICHELI, G.B.; FERREIRA, C.D.; “**Analysis of input impedance influence on calibration of charge conditioning amplifiers**”; In: Proc. of XXIII IMEKO World Congress “Measurement: sparking tomorrow’s smart revolution” August 30 - September 3, 2021, Yokohama, Japan.
- TH BRUNS, D NORDMANN, G P RIPPER, J H WINTHER, C HOF, S RUIZ, G DA SILVA PINEDA, H NOZATO, A ZUO, L DICKINSON, C S VELDMAN, A KOZLYAKOVSKIY, C SHAN, A IVASHCHENKO AND R A ALLEN. Final report on the CIPM key comparison CCAUV.V-K5, *Metrologia* **58** 09001, 2021. <https://doi.org/10.1088/0026-1394/58/1A/09001>
- RIPPER, G.P.; FERREIRA, C.D.; DIAS, R.S.; MICHELI, G.B.; “**Reduction of gravity effect on the results of low-frequency accelerometer calibration**”, ACTA IMEKO, ISSN: 2221-870X, December 2020, Volume 9, Number 5, 365 – 368. http://dx.doi.org/10.21014/acta_imeko.v9i5.1002
- SUN QIAO, HU HONGBO, AKIHIRO OTA, HIDEAKI NOZATO, GUSTAVO P RIPPER, LORENZO MARCOS MUÑIZ MENDOZA, ANTON KOZLYAKOVSKIY,

IAN VELDMAN, THOMAS BRUNS, LAURENCE DICKINSON AND YONG BONG LEE. **Key comparison in the field of acceleration on low intensity shock sensitivity**. Metrologia **56** 09003, 2019. <https://doi.org/10.1088/0026-1394/56/1A/09003>

- MICHELI, G.B.; DIAS, R.S.; RIPPER, G.P.; “**Primary Shock calibration at INMETRO**”, In: IOP Conf. Series: Journal of Physics: Conf. Series 1065 (2018) 222004, XXII World Congress of the International Measurement Confederation (IMEKO 2018), Belfast, Ireland, doi:10.1088/1742-6596/1065/22/222004.
- FERREIRA, C.D.; RIPPER, G.P.; DIAS, R.S.; MICHELI, G.B.; TEIXEIRA, D.B.; “**Primary calibration system of accelerometers at low frequencies by sine approximation method**”, In: Proc. of the Congresso Brasileiro de Metrologia - Metrologia 2017, Fortaleza-CE, 26-29 November 2017 (In Portuguese: Sistema de calibração primária de acelerômetros por aproximação de senos em baixas frequências).
- RIPPER, G.P.; FERREIRA, C.D.; DIAS, R.S.; MICHELI, G.B.; “**Improvement of the primary low-frequency accelerometer calibration system at INMETRO**”, In: Proc. of IMEKO 23rd TC3, 13th TC5 and 4th TC22 International Conference, 30 May to 1 June, 2017, Helsinki, Finland.
- QIAO, S.; LIFENG, Y.; BARTOLI, C.; VELDMAN, I.; RIPPER, G.P.; BRUNS, T.; LICHT, T.R.; KOLASA, J.; HOF, C.; SILVA PINEDA, G.; DICKINSON, L.; OTA, A.; CHEUNG, W.S.; YANKOVSKY, A.; SHAN, C.; “**Final report of CCAUV.V-K3: key comparison in the field of acceleration on the complex charge sensitivity**”, Metrologia, Vol. 54, Tech. Suppl. 09001, 2017. <https://doi.org/10.1088/0026-1394/54/1A/09001>.
- SANTOS, S.F.; RIPPER, G.P.; “**Chapter 8. International metrological structure**”, e-book Metrologia Vol.1: Fundamentos, editora Brasport Livros e Multimídia Ltda, 2017 (In Portuguese: Capítulo 8. Estrutura Metrológica Internacional).

ULTRASOUND:

- MAYWORM, R.C.; ALVARENGA, A.V.; COSTA-FELIX, R.P.B.; “**A metrological approach to the time of flight diffraction method (ToFD)**”. Measurement Vol. 167, 1 January 2021, 108298.
- ALVARENGA, A.V.; TEIXEIRA, C.A.D.; VON KRÜGER, M.A.; PEREIRA, W.C.A.; “**Method for estimating average grey-level's measurement uncertainty from ultrasound images for non-invasive estimation of temperature in different tissue types**”. Ultrasonics, Vol. 106, August 2020, 106139.
- DUARTE, M.A.; PEREIRA, W.C.A.; ALVARENGA, A.V.; “**Calculating Texture Features from Mammograms and Evaluating their Performance in Classifying Clusters of Microcalcifications**”. In: Proc. 15th Mediterranean Conference on Medical and Biological Engineering and Computing (Medicon 2019), Coimbra, Portugal, 26-28 September 2019.
- SOUZA, R.M.; MOSQUEIRA DE ASSIS, M.K. COSTA-FÉLIX, R.P.B.; ALVARENGA, A.V.; “**Metrological approach for characterizing ultrasonic properties of soft tissue-mimicking material**”. In: Proc. 15th Mediterranean Conference on Medical and Biological Engineering and Computing (Medicon 2019), Coimbra, Portugal, 26-28 September 2019.
- ALVARENGA, A.V.; FABRICIO, M.; SILVA, C.E.R.; COSTA-FÉLIX, RODRIGO P. B.; “**Characterization of bone demineralization by ultrasound using convolutional neural networks**”. In: Proc. 8th International Symposium on Ultrasonic Characterization of Bone (ISUCB 2019), Frejus, France, 24-26 June 2019.

- BAÊSSO, R.M.; COSTA-FELIX, R.P.B.; MILORO, P.; ZEQUIRI, B.; **“Ultrasonic parameter measurement as a means of assessing the quality of biodiesel production”**. Fuel (Elsevier), Volume 241, p. 155-163, 1st April 2019, <https://doi.org/10.1016/j.fuel.2018.12.032>.
- TEIXEIRA, C.A.; PASTRANA-CHALCO, M.; SIMÕES, R.J.; PEDROSA, A.; VON KRÜGER, M.A.; ALVARENGA, A.V.; FONTES-PEREIRA, A.J.; PEREIRA, W.C. A.; **“On the feasibility of ultrasound imaging enrichment by medium-temperature changes”**, Ultrasonic Imaging. Vol. 41, Issue 1, p.17-34, 1st January 2019, doi: 10.1177/0161734618800660.
- MORGADO, G.; MIQUELETI, S.A.; COSTA-FELIX, R.P.B.; **“Ultrasound Power Measurement with a water-based Calorimeter”**, In: Proc. of XXVI Brazilian Congress on Biomedical Engineering. IFMBE Proceedings, vol 70/1, Búzios - Rio de Janeiro, October 2018, https://doi.org/10.1007/978-981-13-2119-1_134
- OLIVEIRA, P.A.; ALVARENGA, A.V.; COSTA-FÉLIX, R.P.B.; **“Ultrasonic output power measurement according to IEC 61161:2013”**, In: Proc. of XXVI Brazilian Congress on Biomedical Engineering. IFMBE Proceedings, vol 70/1, Búzios - Rio de Janeiro, October 2018, https://doi.org/10.1007/978-981-13-2119-1_133.
- SILVA, J.G.; ALVARENGA, A.V.; **“Evaluating the Reliability and Validity of a Questionnaire Used to collect data about the Periodic Evaluation of Ultrasound Therapy Equipment”**, In: Proc. of XXVI Brazilian Congress on Biomedical Engineering. IFMBE Proceedings, vol 70/1, Búzios - Rio de Janeiro, October 2018, DOI: 10.1007/978-981-13-2119-1_128.
- SOUZA, R.M; COSTA-FÉLIX, R.P.B; ALVARENGA, A.V.; **“Attenuation coefficient variation as a function of temperature in a cortical bone phantom”**, In: Proc. of XXVI Brazilian Congress on Biomedical Engineering. IFMBE Proceedings, vol 70/1, Búzios - Rio de Janeiro, October 2018, https://doi.org/10.1007/978-981-13-2119-1_125.
- SOUZA, R.; COSTA-FÉLIX, R.P.B.; ALVARENGA, A.V.; **“Uncertainty model of the temperature rise measurements in the applied part of ultrasound physiotherapy equipment”**, In: Proc. of XXVI Brazilian Congress on Biomedical Engineering. IFMBE Proceedings, vol 70/1, Búzios - Rio de Janeiro, October 2018, https://doi.org/10.1007/978-981-13-2119-1_135.
- OLIVEIRA, PÂMELLA A.; BAESSO, RAPHAELA M.; MORAES, GABRIEL C.; ALVARENGA, ANDRÉ V.; COSTA-FÉLIX, RODRIGO P.B.; **“Chapter 7: Ultrasound Methods for Biodiesel Production and Analysis”**. Book: Biofuels - State of Development, editor: Krzysztof Biernat, IntechOpen, March 5th, 2018, DOI: 10.5772/intechopen.74303.
- ALMEIDA, R.O.; AGUIAR JÚNIOR, E.A.; COSTA-FELIX, R.P.B.; **“Regulation of flow computers for the measurement of biofuels”**. Journal of Physics: IOP Conference Series - 9th Brazilian Congress on Metrology (Metrologia 2017), Volume 975, p. 012017, 2018, DOI: 10.1088/1742-6596/975/1/012017.
- OLIVEIRA, P.A.; SILVA, R.M.B.; MORAIS, G.C.; ALVARENGA, A.V.; COSTA-FELIX, R.P.B.; **“Speed of sound in biodiesel produced by low power Ultrasound”**. Journal of Physics: IOP Conference Series - 9th Brazilian Congress on Metrology (Metrologia 2017), Volume 975, p. 012019, 2018.
- MORGADO, G; MIQUELETI, S; COSTA-FELIX, R P B.; **“Measurement of ultrasound power using a calorimeter”**, Journal of Physics: IOP Conference Series - 9th Brazilian Congress on Metrology (Metrologia 2017), Volume 975, p. 012010, 2018.
- SOUZA, R M; COSTA-FELIX, R P B; ALVARENGA, A.V.; **“The influence of temperature on the speed of sound of cortical bone phantom: a metrological view”**.

Journal of Physics: IOP Conference Series -9th Brazilian Congress on Metrology (Metrologia 2017), Volume 975, p. 012021, 2018.

- SOUZA, R M ; MONTEIRO, R M; COSTA-FELIX, R P B ; ALVARENGA, A V. **“Ultrasonic properties of a four years old tissue-mimicking material”**. Journal of Physics: IOP Conference Series - 9th Brazilian Congress on Metrology (Metrologia 2017), Volume 975, p. 012025, 2018.
- SALES, E.; SILVA, C.E.R.; LETICHEVSKY, S.; SANTOS, R.; LEITAO, R.; SANTOS, C.T.; DE OLIVEIRA, L.F.; DE AVILLES, R.; MONTEIRO, M.; COSTA-FELIX, R.P.B.; PACIORNIK, S.; ANJOS, M.; **“Chemical induced demineralization study in cortical bone”**. Journal of Instrumentation - 24th International congress on x-ray optics and microanalysis (ICXOM24), Volume 13, p. C05010-C05010, 2018.
- OLIVEIRA, D.P.; PEREIRA, W.C.A.; COSTA-FÉLIX, R.P.B.; **“Design, confection and calibration of a flow phantom with ultrasound applications”**. Journal of Physics: IOP Conference Series - 2017 Joint IMEKO TC1-TC7-TC13 Symposium: Measurement Science Challenges in Natural and Social Sciences, Volume 1044, p. 012020, 2018.
- JUNIOR, D.S.; BRAZ, D.S.; SILVA, C.E.R.; COSTA-FELIX, R.P.B.; **“Proficiency test on thickness measurement using ultrasound: a metrological aid to improve safety in transportation of dangerous products”**. Measurement (Elsevier), Volume 1044, p. 012020, 2018.
- FIGUEIREDO, M.K.K.; SILVA, C.E.R.; ALVARENGA, A.V.; COSTA-FÉLIX, R.P.B.; **“Relating speed of sound and echo amplitude with biodiesel manufacture”**. Chemical Engineering Research and Design (Elsevier), Volume. 136, p. 1, 2018.
- VIEIRA, R. C.; COSTA-FELIX, R.P.B.; **“Ultrasound measurement apparatus for liquids characterization”**. IOP Conference Series: Journal of Physics, Volume. 975, p. 012026, 2018.
- COSTA-FELIX, R.P.B.; FIGUEIREDO, M.K.K.; ALVARENGA, A.V.; **“An ultrasonic method to appraise diesel and biodiesel blends”**, Fuel, Vol. 227, 1st September 2018, p. 150-153, <https://doi.org/10.1016/j.fuel.2018.04.077>.
- SOUZA, R.M.; MONTEIRO, R.M.; COSTA-FELIX, R.P.B.; ALVARENGA, A.V.; **“Ultrasonic properties of a four years old tissue-mimicking material”**. IOP Conference Series: Journal of Physics, Vol. 975, 012025, 2018, DOI: 10.1088/1742-6596/975/1/012025.
- SOUZA, R.M.; COSTA-FELIX, R.P.B.; ALVARENGA, A.V.; **“The influence of temperature on the speed of sound of cortical bone phantom: a metrological view”**, IOP Conference Series: Journal of Physics, Vol. 975, 012021, 2018, <https://doi.org/10.1088/1742-6596/975/1/012021>.
- BAESSO, R.M.; OLIVEIRA, P.A.; MORAIS, G.C.; ALVARENGA, A.V.; COSTA-FELIX, R.P.B.; **“Using ultrasonic velocity for monitoring and analysing biodiesel production”**, Fuel (Elsevier), Vol. 226, 15th August 2018, Pages 389-399, <https://doi.org/10.1016/j.fuel.2018.04.039>.
- COSTA-JÚNIOR, J.F.S.; CORTELA, G.A.; MAGGI, L.E.; ROCHA, T.F.D.; PEREIRA, W.C.A. ; COSTA-FELIX, R.P.B.; ALVARENGA, A.V.; **“Measuring uncertainty of ultrasonic longitudinal phase velocity estimation using different time-delay estimation methods based on cross-correlation: Computational simulation and experiments”**, Measurement (Elsevier), Vol. 122, July 2018, p. 45-56, <https://doi.org/10.1016/j.measurement.2018.01.073>.
- DANTAS, T.M.; COSTA-FELIX, R.P.B.; MACHADO, J.C.; **“Nonlinear frequency modulated excitation signal and modified compressing filter for improved range**

- resolution and side lobe level of ultrasound echoes**”, Applied Acoustics (Elsevier), Vol. 130, p. 238-246, 15th January 2018, <https://doi.org/10.1016/j.apacoust.2017.10.008>.
- BAÊSSO, R.M.; OLIVEIRA, P.A.; MORAES, G.C.; ALVARENGA, A.V.; COSTA-FÉLIX, R.P.B.; **“Chapter 11: Ultrasound as a Metrological Tool for Monitoring Transesterification Kinetics”**. Book: Advanced Chemical Kinetics, Editor: Muhammad Akhyar Farrukh, IntechOpen, December 20th 2017, DOI: 10.5772/intechopen.70501.
 - MAYWORM, R.C.; COSTA-FÉLIX, R.P.B.; ALVARENGA, A.V.; **“Aspectos Metrológicos da Técnica Tempo de Voo da Onda Difractada (ToFD) para Utilização em Ensaios Não Destrutivos (ENDs) por Ultrassom”**. Revista Soldagem e Inspeção, 2017, <http://dx.doi.org/10.1590/0104-9224/si2104.02>.
 - FIGUEIREDO, M.K.-K.; ALVARENGA, A.V.; COSTA-FÉLIX, R.P.B. **“Ultrasonic attenuation and sound velocity assessment for mixtures of gasoline and organic compounds”**. Fuel, v. 191, p. 170-175, 2017. ELSEVIER.
 - SANTOS, T.Q.; ALVARENGA, A.V.; OLIVEIRA, D.P.; COSTA-FÉLIX, R.P.B.; **“Metrological Validation of a Measurement Procedure for the Characterization of a Biological Ultrasound Tissue-Mimicking Material”**. Ultrasound in Medicine & Biology, v. 43, p. 323-331, 2017. ELSEVIER.