

National Institute of Standards and Technology (NIST)

Recent AUV Publications, October 2025

Selected Publications - NIST, 2020 - 2025

A. Chijioke, N. Vlajic, and E. H. Lucon, Dynamic calibration of instrumented Charpy strikers, *Measurement: Sensors* 38, Supplement, 101746, (2025).

<https://doi.org/10.1016/j.measen.2024.101746>.

J. H. Strait, R. A. Allen, R., Optical Characterization of Parasitic Motion in a Long-Stroke Shaker, *Metrologia* 62, 015001, (2024). <https://doi.org/10.1088/1681-7575/ad90e6>

J. H. Strait and A. Chijioke, Progress toward the Kibble Dynamic Force Reference, 2024 *Conference on Precision Electromagnetic Measurements (CPEM)*, Denver, CO, USA, (2024).

<https://doi.org/10.1109/CPEM61406.2024.10645998>

K. Han, D. A. Long, S. M. Bresler, J. Song, Y. Bao, B. J. Reschovsky, K. Srinivasan, J. J. Gorman, V. Aksyuk, and T. W. LeBrun, Low-power, agile electro-optic frequency comb spectrometer for integrated sensors, *Optica* 11, 392-398, (2024). <https://doi.org/10.1364/OPTICA.506108>

A. Chijioke, R. A. Allen, S. Fick, B. J. Reschovsky, J. H. Strait, and R. Wagner, Primary Sound Standard Based On Dynamic Fabry Perot Interferometry, *Proceedings of the 2023 CCM & IMEKO TC16 7th International Conference on Pressure and Vacuum Metrology*, Washington D.C., USA, (2023). <https://doi.org/10.21014/tc16-2023.15>

D. A. Long, J. R. Stroud, B. J. Reschovsky, Y. Bao, F. Zhou, T. W. LeBrun, D. F. Plusquellic, J. J. Gorman, and S. M. Bresler, High accuracy, high dynamic range optomechanical accelerometry enabled by dual comb spectroscopy, *APL Photonics* 8, 091302 (2023).

<https://doi.org/10.1063/5.0165582>

D. A. Long, B. J. Reschovsky, T. W. LeBrun, J. J. Gorman, J. T. Hodges, D. F. Plusquellic, and J. R. Stroud, High dynamic range electro-optic dual-comb interrogation of optomechanical sensors, *Optics Letters* 47, 4323-4326 (2022). <https://doi.org/10.1364/OL.460028>

D. E. Burns, N. Vlajic, A. Chijioke, and P. A. Parker, Aerodynamic Metrologist's Guide to Dynamic Force Measurement, *AIAA Journal of Aircraft*, 59 (2022).

<https://doi.org/10.2514/1.C036676>

J. Geist and M. Gaitan, Type A uncertainty analysis of type B analysis for three-axis accelerometer calibrations, *Metrologia* 59, 052101 (2022) <https://doi.org/10.1088/1681-7575/ac8d10>

M. Gaitan and J. Geist, (2021), Calibration of Triaxial Accelerometers by constant rotation rate in the gravitational Field, *Measurement* 189 (2021).
<https://doi.org/10.1016/j.measurement.2021.110528>

R. Wagner, R. A. Allen and Q. Dong, Laser-based comparison calibration of laboratory standard microphones, *JASA Express Letters* 1, 082803 (2021).
<https://doi.org/10.1121/10.0005919>

J. Alexander, S. Trippel, R. Wagner and S. Armstrong, The peak height insertion gain (PHIG) method for quantifying acoustic feedback in hearing aids, *Journal of the Acoustical Society of America* 150, 1635-1651 (2021). <https://doi.org/10.1121/10.0005987>

J. R. Pratt, S. Schlamminger, F. Seifert and D. B. Newell, Verification of an *in situ* calibrated optomechanical accelerometer for use as a strong ground motion seismic reference. *Metrologia* 58, 055005 (2021). <https://doi.org/10.1088/1681-7575/ac1402>

M. Gaitan, I. Lopez and J. Geist, Reduction of calibration comparison uncertainty due to mounting for 3-axis accelerometers using the intrinsic properties model, *Metrologia* 58, 035006 (2021). <https://doi.org/10.1088/1681-7575/abeccf>

F. Zhou, Y. Bao, R. Madugani, D. A. Long, J. J. Gorman, and T. W. LeBrun, Broadband thermomechanically limited sensing with an optomechanical accelerometer, *Optica* 8, 350-356 (2021). <https://doi.org/10.1364/optica.413117>.

D. A. Long, B. J. Reschovsky, F. Zhou, Y. Bao, T. W. LeBrun and J. J. Gorman, Electro-optic frequency combs for rapid interrogation in cavity optomechanics, *Optics Letters* 46, 645-648 (2021). <https://doi.org/10.1364/OL.405299>

M. Gaitan, J. Geist, B. J. Reschovsky and A. Chijioke, Characterization of laser Doppler vibrometers using acousto-optic modulators, *ACTA IMEKO* 9, 361-364 (2020).
https://doi.org/10.21014/acta_imeko.v9i5.1001

M. Afridi, J. Geist and M. Gaitan, Shock measurements based on pendulum excitation and laser Doppler velocimetry: primary calibration by SI-traceable distance measurements, *Journal of Research of the National Institute of Standards and Technology* 125, 1-13 (2020).
<https://doi.org/10.6028/jres.125.011>

Selected Publications - Underwater Sound Reference Division (US Designated Institute for Underwater Acoustics), 2016-2025

C. M. Kean and W. H. Slater, The effect of temperature on acoustic transducer sensitivity and transmitting response, *Underwater Acoustics Conference and Exhibition Proceedings*, Neos Marmaras, Greece (2025).

C. V. Castillo, Exploration of acoustic calibration metadata storage and reusability in service of measurement reproducibility, *Underwater Acoustics Conference and Exhibition*, Neos Marmaras, Greece (2025).

W. H. Slater, Low-frequency plane traveling wave generation in a cylindrical waveguide, *International Conference on Underwater Acoustics*, Bath, England (2024).

<https://icua2024.org/wp-content/uploads/2024/06/ICUA2024-Abstracts.pdf>.

S. E. Crocker, W. H. Slater, and M. A. Bergeron, Multivariate control charts for calibration of hydrophones using the Mahalanobis statistic, *Metrologia* 60 (2023). <https://doi.org/10.1088/1681-7575/acedb1>

S. E. Crocker, F. D. Fratantonio, P. E. Hart, D. Foster, T. F. O'Brien, and S. Labak, Characteristics of the acoustic fields radiated by certain high-resolution marine geophysical survey systems, *IEEE J. Ocean. Eng.*, 44, 796-813 (2019).

<https://doi.org/10.1109/JOE.2018.2829958>

W. H. Slater, S. E. Crocker, and S. Baker, A primary method for the complex calibration of a hydrophone from 1 Hz to 2 kHz, *Metrologia*, 55, 84-94(2017).

<https://doi.org/10.1088/1681-7575/aa87f7>

J. D. Iafrate, S. Watwood, E. A. Reyier, D. M. Scheidt, G. Dossot, and S. E. Crocker, Effects of pile driving on the residency and movement of tagged reef fish, *PLoS ONE* 11, e0163638, (2016). <https://doi.org/10.1371/journal.pone.0163638>

J. D. Iafrate, S. L. Watwood, E. A. Reyier, M. Gilchrest and S. E. Crocker, Residency of Reef Fish During Pile Driving within a Shallow Pierside Environment, *Adv. Exp. Med. Bio.* 875, 479-487 (2016). https://doi.org/10.1007/978-1-4939-2981-8_58

S. E. Crocker and R. R. Smalley, Calibration of a digital hydrophone line array at low frequency, *IEEE J. Ocean. Eng.* 44, 1020-1027 (2016).

<https://doi.org/10.1109/JOE.2016.2527118>

S. E. Crocker and F. D. Fratantonio, Characteristics of sounds emitted during high-resolution marine geophysical surveys, *Bureau of Ocean Energy Management Report 2016-044*, (2016).