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**Paul Fromme
Zhongqing Su**
Editors

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Contents

ix	<i>Authors</i>
xi	<i>Conference Committee</i>
xv	<i>Introduction</i>

GUIDED WAVES FOR SHM I

10972 04	Guided wave techniques for damage detection and property characterization in composite aerospace structures [10972-1]
10972 05	A helical-based ultrasonic imaging algorithm for structural health monitoring of cylindrical structures [10972-2]
10972 06	High frequency guided wave defect imaging in monocrystalline silicon wafers [10972-3]
10972 07	Ultrasonic guided wave propagation in a repaired stiffened composite panel [10972-4]
10972 08	Acoustic source localization in non-homogenous plates [10972-5]

SENSORS FOR REAL-TIME MONITORING I

10972 09	A deep learning-based framework for two-step localization and characterization of acoustic emission sources in metallic panels using only one sensor [10972-6]
10972 0B	An innovative decentralised data fusion using electromechanical impedance techniques [10972-8]
10972 0C	Finite element evaluation of EMI-based structural health monitoring in high frequencies [10972-9]
10972 0D	Application of electromechanical impedance for damage assessment of composite power boat [10972-10]

ELASTIC AND METAMATERIALS I

10972 0G	Non-reciprocity in time-periodic phononic materials with a non-zero moving velocity [10972-13]
10972 0I	Viscoelastic effects on the frequency response of elastomeric metastructures [10972-15]

10972 0J **Isolating vibrations with different polarizations via lightweight embedded metastructure**
[10972-16]

MODELING OF ULTRASONIC AND GUIDED WAVES

10972 0L **An improved analytical method to overcome convergence issues in composites guided wave prediction** [10972-18]

10972 0M **Improved global-local model to predict guided-wave scattering patterns from discontinuities in complex parts** [10972-19]

10972 0N **Guided wave mode conversion phenomenon in composite materials: numerical and experimental study** [10972-20]

10972 0O **Wave damage interaction in metals and composites** [10972-21]

ELASTIC AND METAMATERIALS II

10972 0Q **Flexural wave control via origami-based elastic metamaterials** [10972-23]

MONITORING OF AEROSPACE AND COMPOSITE STRUCTURES

10972 0U **Hybrid structural health monitoring on a composite plate manufactured with automatic fibers placement including embedded fiber Bragg gratings and bonded piezoelectric patches**
[10972-27]

10972 0V **Preliminary characterization of bonding defects in multi-element spars** [10972-28]

10972 0W **Guided wave damage detection for alpine skis** [10972-29]

10972 0X **Linear and non-linear analysis of composite plates using guided acoustic waves** [10972-30]

10972 0Y **Investigation of manufacturing effects by strength assessment, NDI and guided waves based SHM in composite plates reinforced with bonded stringers** [10972-31]

10972 0Z **THz spectroscopy application for analyzes of internal structure damage due to moisture influence** [10972-32]

10972 10 **Infrared thermography application for analyzes of internal structure damage due to moisture and temperature influence** [10972-33]

SENSORS FOR REAL-TIME MONITORING II

- 10972 12 **Comparison of coverage areas of two different sensor network arrangements for structural health monitoring of plate-like structures** [10972-35]
- 10972 14 **Application of Kalman filter based neutral axis tracking for crack length quantification in beam structures** [10972-37]
- 10972 15 **Femtosecond laser fabricated Fabry-Perot sensors on optical fiber tip for acoustic sensor** [10972-38]

ELASTIC AND METAMATERIALS III

- 10972 17 **Influence of hinge stiffness on the asymmetric wave transport in topological lattices: a parametric study** [10972-40]

CIVIL INFRASTRUCTURE MONITORING I

- 10972 1B **Self-healing degradation of asphalt concrete materials due to cooling cycles** [10972-43]
- 10972 1C **Rockbolt monitoring by means of guided waves** [10972-44]
- 10972 1D **Data fusion approach for characterization of corrosion-induced stress change in prestressing strands using modulated higher-order guided ultrasonic waves** [10972-45]
- 10972 1F **An assessment of in-field non-destructive testing methods for detection of internal defects in standing live trees** [10972-49]
- 10972 1G **Diffusion coefficients estimated from coda wave measurements for nondestructive evaluation of real-size concrete structures** [10972-47]

NONLINEAR ULTRASONIC TECHNIQUES

- 10972 1I **Scanning laser vibrometry imaging of fatigue cracks via nonlinear ultrasonic guided wave scattering and mode conversion** [10972-50]
- 10972 1K **Analyzing the nonlinear mechanisms in active wave modulation spectroscopy and their influence on delamination detection in laminated strips and plates** [10972-52]
- 10972 1M **A thermal sensitivity-based approach for enhancing robustness of ultrasonic evaluation of material acoustic nonlinearity** [10972-55]

CIVIL INFRASTRUCTURE MONITORING II

- 10972 1O **Real-time monitoring system for multi-MW scale wind blades using FBG sensors** [10972-57]
- 10972 1Q **GroundEye: a mobile crowdsourcing structure seismic response monitoring system based on smartphone** [10972-59]
- 10972 1R **Structural health monitoring strategy for wooden houses considering hysteretic response** [10972-60]
- 10972 1S **Simulation and experimental measurement of acoustic wave reflectometry for leak detection in pipes** [10972-97]

SENSORS FOR REAL-TIME MONITORING III

- 10972 1T **Development of P(VDF-TRFE) yarn for strain sensing** [10972-61]
- 10972 1V **Development of an IMU-radar sensor board for three-dimensional digital image correlation camera triangulation** [10972-63]
- 10972 1W **Thermal electrical analysis of serpentine shaped sensing element geometries to enhance the responsivity of thermoresistive sensor** [10972-64]

ELASTIC AND METAMATERIALS IV

- 10972 1Y **Enhanced identifiability of nonlinear ultrasonic superharmonics for crack detection using an aluminum-lead composite bandgap meta-surface** [10972-66]
- 10972 1Z **Dirac-like cone modulation for phononic crystals using deaf band** [10972-67]

GUIDED WAVES FOR SHM II

- 10972 21 **Lamb wave defect detection and evaluation using a fully non-contact laser system** [10972-69]
- 10972 22 **Lamb wave virtual time reversal damage detection algorithm with transducer transfer function compensation** [10972-70]
- 10972 23 **Experimental investigation of Lamb wave-based edge detection methods** [10972-71]
- 10972 24 **Acoustic source localization in anisotropic plates without knowing their material properties: an experimental investigation** [10972-72]
- 10972 25 **Finite element modeling and validation of guided wave scattering** [10972-73]

MEDICAL / BIOMEDICAL APPLICATIONS

- 10972 26 **Evaluation of electromechanical impedance based structural health monitoring for detection of loosening in total knee arthroplasty** [10972-74]
- 10972 28 **Investigation of mechanical boundary conditions on impedance based structural health monitoring in a biomedical environment** [10972-76]
- 10972 29 **Design of a flexible endotracheal tube holder device and study of its effect on cutaneous blood flow in the skin using laser Doppler velocimetry** [10972-77]
- 10972 2A **Non-contact trapping and stretching of biological cells using dual-beam optical stretcher on microfluidic platform** [10972-78]

CIVIL INFRASTRUCTURE MONITORING III

- 10972 2D **Method for detecting road pavement damage based on deep learning** [10972-81]
- 10972 2E **Surface damage detection for concrete bridges using single-stage convolutional neural networks** [10972-82]
- 10972 2F **Research on 2D digital image correlation measurement based on smartphones** [10972-83]

POSTER SESSION

- 10972 2H **Load and temperature assessment in sandwich-structured composite using embedded optical sensors** [10972-85]
- 10972 2K **Effect of void sizes on effective material properties of unidirectional composite materials** [10972-89]
- 10972 2Q **Evaluating the performance of the SuRE method for inspection of bonding using the COMSOL finite element analysis package** [10972-95]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abdullahi, Mustapha, 1S	Hardin, James, 0I
Ahmed, Hossain, 1Z	Holloway, Damien, 1F
Albin, Sacharia, 2A	Howe, Ryan J., 0W
Alnuaimi, H., 0X	Hsu, Yu-Hsiang, 1T
Amjad, U., 0X	Huang, Guoliang, 0J
Amoroso, F., 0Y	Indaleeb, Mustahseen M., 1Z
Anton, Steven R., 0C, 26, 28	Islam, Md. Shariful, 2A
Apuleo, Gianvito, 0V	Jia, Hongbo, 1O
Attarzadeh, M. A., 0G	Jiang, Hanwan, 1G
Baghalian, Amin, 2Q	Jiang, Ruinian, 1G
Banerjee, Sourav, 1Z, 2K	Juhl, Abigail, 0I
Bardenstein, David, 0V	Jurek, Michal, 2H
Barile, M., 0U	Kamatchi, Ganesan, 2A
Behnia, Bahzad, 1B	Kralovec, Christoph, 14
Berrigan, J. Daniel, 0I	Kressel, Iddo, 0V
Bhattacharya, Bishakh, 29	Krishnaswamy, Sridhar, 15
Boffa, N. D., 0U, 0Y	Kudela, Paweł, 0N
Brown, Matthew, 23	Kundu, Tribikram, 08, 0X, 24
Capriotti, Margherita, 04, 0M	Kuo, Chih-Cheng, 1T
Cen, Mingjing, 1I	Lanza di Scalea, Francesco, 04, 0M
Chang, Chih-Chen, 2E	Lecce, L., 0U
Chen, Vincent, 0I	Lee, Chih-Kung, 1T
Chrysochoidis, Nikolaos A., 1K	Leng, Jinsong, 1O
Ciminello, Monica, 0V	Li, Hongwei, 2D
Concilio, Antonio, 0V	Li, Jiaqi, 2D
Cui, Ranting, 04, 0M	Li, Jinke, 1Q, 2F
Cui, Zhiwen, 08	Liu, Hongwei, 1O
Dehghan-Niri, Ehsan, 12	Liu, Yanju, 1O
DeNicola, Andrew C., 0W	Livadiotis, Stylianos, 05
Deo, Makarand, 2A	Lopresto, V., 0X
Dimaapi, Mikaela D., 0W	Lv, Xingjun, 2F
Dong, Aotuo, 2A	Ma, Jihong, 17
Dubuc, Brennan, 09, 1D	Ma, Zhaoyun, 21
Ebrahimkhanlou, Arvin, 05, 09, 1D	Majewska, Katarzyna, 0Z, 10, 2H
Faisal Haider, Mohammad, 0L	Malinowski, Paweł H., 07, 0B, 0D, 0N
Farhangdoust, Saman, 2Q	Mao, Xiaoming, 17
Fiborek, Piotr, 07	Masserey, Bernard, 06
Fromme, Paul, 06, 25	Matlack, Kathryn, 0I
Garg, Aman, 29	Mehrabi, Armin, 2Q
Gawroński, Mateusz, 24	Mei, Hanfei, 0O
Ghattas, Nathan W., 28	Memmolo, V., 0U
Ghyabi, Mehrdad, 12	Meneghini, R. Michael, 26
Gibbs, Brandon, 2A	Mieloszyk, Magdalena, 0Z, 10, 2H
Giurgutiu, Victor, 0L, 0O	Mița, Akira, 1R
Gonella, Stefano, 17	Monaco, E., 0U, 0Y
Gupta, Abhishek, 1W	Niezrecki, Christopher, 1V
Gupta, Devendra, 29	Nolan, Eric C., 0C
Hafezi, Mohammad Hadi, 1F	Nouh, M., 0G
Han, Ruicong, 1Q	Obenchain, Matthew B., 0W

Ostachowicz, Wiesław, 07, 0D, 0N, 0Z, 10, 14, 2H	Zhang, Chaobo, 2E
Ou, Jinping, 1Q	Zhang, Denggang, 1O
Oyadiji, S. Olutunde, 1S	Zhang, Jiquan, 1G
Packo, Pawel, 24	Zhang, Mingkai, 0Q
Pierce, Connor, 0I	Zhang, Zhichun, 1O
Ponder, Robert L., 26, 28	Zhao, Weijia, 0J
Preisler, Andreas, 14	Zhao, Xuefeng, 1Q, 2D, 2F
Puchowski, Bartosz, 0D	Zhou, Di, 17
Rao, Danyu, 1Y	Zhu, Rui, 0J, 0Q
Reis, Henrique, 1B	
Rekatsinas, Christoforos S., 1K	
Ricci, F., 0U, 0Y	
Robyr, Jean-Luc, 06	
Russo, P., 0X	
Saadatz, Mohammadsadegh, 1Z, 2K	
Sabato, Alessandro, 1V	
Safaei, Mohsen, 0C	
Salamone, Salvatore, 05, 09, 1D	
Saravanos, Dimitris A., 1K	
Schaal, Christoph, 23	
Schagerl, Martin, 14	
Schroder, Kai-Uwe, 14	
Schulz, Katja, 23	
Sen, Novonil, 24	
Shen, Yanfeng, 1I, 1Y, 22	
Shoham, Shay, 0V	
Sikdar, Shirsendu, 07	
Simon, Mathieu, 06	
Singh, Shishir K., 0B	
Snyder, Matthew P., 0W	
Soman, Rohan N., 0D, 14	
Spada, Antonino, 0M	
Stepinski, Tadeusz, 1C	
Su, Zhongqing, 1M	
Sun, Kai, 17	
Tansel, Ibrahim N., 2Q	
Tashakori, Shervin, 2Q	
Taskhiri, Mohammad Sadegh, 1F	
Tavaf, Vahid, 2K	
Tian, Yiran, 1Y	
Turner, Paul, 1F	
Uhl, Tadeusz, 24	
Uppalapati, Balaadithya, 2A	
Wandowski, Tomasz, 0B, 0D, 0N	
Wang, Junzhen, 22	
Wang, Kai, 1M	
Wang, Wei-Chih, 1W	
Wang, Yitian, 0J	
Wei, Heming, 15	
Willey, Carson, 0I	
Xie, Botao, 1Q, 2F	
Xu, Wu, 1I, 1Y	
Yamamoto, Natsuko, 1R	
Yan, Xu, 2F	
Yang, Jinkyu, 0Q	
Yin, Shenxin, 08	
Yu, Lingyu, 2I	
Yuan, Shenfang, 1M	
Zhan, Hanyu, 1G	

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- 1 Guided Waves for SHM I
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Wieslaw M. Ostachowicz, The Szwalski Institute of Fluid-Flow Machinery (Poland)
Tadeusz Uhl, AGH University of Science and Technology (Poland)
- 3 Elastic and Metamaterials I
Guoliang Huang, University of Missouri (United States)
Fabio Semperlotti, Purdue University (United States)
- 4 Modeling of Ultrasonic and Guided Waves
Victor Giurgiutiu, University of South Carolina (United States)
Francesco Lanza di Scalea, University of California, San Diego (United States)
- 5 Elastic and Metamaterials II
Guoliang Huang, University of Missouri (United States)
Mostafa A. Nouh, University at Buffalo (United States)

- 6 Monitoring of Aerospace and Composite Structures
Fabrizio Ricci, Università degli Studi di Napoli Federico II (Italy)
Tribikram Kundu, The University of Arizona (United States)

- 7 Sensors for Real-Time Monitoring II
Christopher Niezrecki, University of Massachusetts Lowell
(United States)
Sridhar Krishnaswamy, Northwestern University (United States)

- 8 Elastic and Metamaterials III
Fabio Semperlotti, Purdue University (United States)
Guoliang Huang, University of Missouri (United States)

- 9 Civil Infrastructure Monitoring I
Tadeusz Stepinski, AGH University of Science and Technology
(Poland)
Piervincenzo Rizzo, University of Pittsburgh (United States)

- 10A Nonlinear Ultrasonic Techniques
Zhongqing Su, The Hong Kong Polytechnic University
(Hong Kong, China)
Anthony J. Croxford, University of Bristol (United Kingdom)

- 10B Civil Infrastructure Monitoring II
Hadi Fekrmandi, South Dakota School of Mines and Technology
(United States)

- 11A Sensors for Real-Time Monitoring III
Alessandro Sabato, University of Massachusetts Lowell (United States)
Wei-Chih Wang, Tsinghua University (United States)

- 11B Elastic and Metamaterials IV
Hussain Ahmed, University of South Carolina (United States)
Mohammad Sadegh Saadazzi, University of South Carolina
(United States)

- 12A Guided Waves for SHM II
Lingyu Yu, University of South Carolina (United States)
Yanfeng Shen, Shanghai Jiao Tong University (China)

- 12B Medical / Biomedical Applications
Xiaoning Jiang, North Carolina State University (United States)

- 13 Civil Infrastructure Monitoring III
Henrique L. Reis, University of Illinois (United States)

Introduction

Since 2001, the SPIE conference on Health Monitoring of Structural and Biological Systems has brought together engineers, materials scientists, medical doctors, and biologists to exchange their ideas on this important topic and to update their research findings. The emphasis of this conference is to recognize that non-destructive sensing, sensor array design, signal acquisition and transmission, signal processing, energy harvesting, etc., are integral parts of health monitoring for both structural and biological systems.

Both the biological and physical science communities are learning from one another by coming to this conference and exchanging ideas. Some of the recent advances in the science and technology of health monitoring techniques that go beyond the traditional non-destructive testing for internal flaw detection are presented in these proceedings. New diagnosis, prognosis, and rehabilitation techniques applied to engineering structures made of metal, concrete, and composites, as well as biological systems are included. The papers published here cover a wide range of technologies. It is hoped that this conference will stimulate further interactions between physical and life science communities resulting in newer development of more innovative techniques for health monitoring applications.

The conference was initiated in 2001 by Prof. Tribikram Kundu, and it has grown under his chairmanship with successful annual conferences organized on this topic, with the next one planned for the year 2020.

Proceedings volume 10972 contains papers presented at the 2019 conference. Papers presented in the earlier conferences can be found in Proceedings volumes: 4335 (2001), 4702 (2002), 5047 (2003), 5394 (2004), 5768 (2005), 6177 (2006), 6532 (2007), 6935 (2008), 7295 (2009), 7650 (2010), 7984 (2011), 8348 (2012), 8695 (2013), 9064 (2014), 9438 (2015), 9805 (2016), 10170 (2017), and 10600 (2018).

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Paul Fromme