

14th International Conference on Theoretical and Computational Acoustics (ICTCA 2019)

Beijing, China
28 July – 1 August 2019

Editors:

**Juan Zeng
Xiuming Wang**

ISBN: 978-1-5108-9729-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2019) by Institute of Acoustics, Chinese Academy of Sciences
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact Institute of Acoustics, Chinese Academy of Sciences
at the address below.

Institute of Acoustics, Chinese Academy of Sciences
No. 21 North 4th Ring Road,
Haidian District, 100190
Beijing, China

<http://english.ioa.cas.cn/>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENT

Underwater Acoustics

A practical bottom rough surface reverberation model in shallow water	1
Jinrong Wu, Peng Li, Erchang Shang, Zhendong Zhao	
Effects of rough sea-ice on the sound propagation in the Arctic ocean	13
Qianqian Li, Juan Shi, Zhenglin Li	
Extracting Bottom Roughness Parameters Using Broadband Reverberation Data in Shallow Water	27
HOU QIANNAN, SHANG ERCHANG, WU JINRONG	
Acoustic Intensity Fluctuation Due to Internal Tide in the Yellow Sea	37
Li Fan, Hu Tao, Guo shengming	
Numerical Modeling of the Sound Propagation Under Rough Sea Surface of the PM Spectrum	47
MEIJUAN YAO, LICHENG LU, Li MA, SHENGMING GUO	
Matched-field geoacoustic inversion using propagation invariant in the presence of nonlinear internal waves	55
Wenhua Song, PengYu Wang	
An Underwater Acoustic Network Positioning Algorithm Combined with its Protocol	65
YI-XUAN FENG, DONG XIAO, YAN CHEN, LI-PING WEI, MIN ZHAO, LI MA	
Analysis on the Sound Propagation Caused by Very Low Frequency Sound Source near the Sloped Seabed	73
XU Liang, ZHANG Haigang	
At-sea Observation and Theoretical Simulation on Very-low-frequency Sound Propagation in Shallow Water	81
Jingpu Cao, Shuyuan Du, Shihong Zhou, Yubo Qi	

Simulations of VLF Underwater- and Seismo- acoustic Propagation Fields in the Wedge Coast and the Borehole Onshore	87
ShuyuanDu, ShihongZhou, YuboQi	
The Analysis of Multi-layered Effect for Sea Bottom at Low-frequency Acoustic Propagation	99
Ya-Xiao Mo, Chao-Jin Zhang, Li-Cheng Lu, Bing-Wen Sun, Sheng-Ming Guo	
Estimation of Sediment Parameter Based on Supervised Machine Learning: Preliminary Results from at-sea Data	107
Haiyan Ni, Wenbo Wang, Qunyan Ren, Licheng Lu, Li Ma	
Influence of Periodic Corrugated Surfaces on the Generation and Propagation of Scholte Wave	113
Minshuai Liang, Gaokun Yu, Linhui Peng	
Anomalous Transmission Loss due to Bathymetry Variation	123
LICHENG LU, QUNYAN REN, SHENGMING GUO, LI MA	
Simulation of the Three-Dimensional Effect of Ocean Ambient Noise Field in Seamount Area	131
Shan Yuanchun, Lin Jianheng, Yi Xuejuan, Jiang Pengfei, Sun Junping, Li Na	
Detection and Localization of Indo-Pacific Humpback Dolphin’s Whistle Signal with multiple PAM stations in the vicinity of Taichung Harbor	139
Wei-Yen Chu, Wei-Lun Li, Chi-Fang Chen	
Statistical Model of High Density Ships in Port and its Application in Ambient Noise Spatial Distribution	147
GUOLI SONG, XINYI GUO	
Underwater noise simulation of impact pile driving with the noise mitigation technology for offshore wind farm in Taiwan	155
Chiu-Kuan Shih, Yin-Ying Fang, Wei-Chun Hu, Chi-Fang Chen	
Multi-mode Excitation of Frequency Modulated Signals in Shallow Water	165
XIAO-FENG YI, DA-YONG PENG, JUAN ZENG, LI MA	

Sequential source localization using unscented particle filter under circumstances of highly nonlinear time-evolving sound speed profiles	173
Su Lin, Guo Shengming, Ren Qunyan, Ma Li	
Source Depth Estimation Based on Mode Phase Matching in Shallow Water	185
CAO HUAIGANG, ZHAO ZHENDONG, GUO SHENGMING, MA LI	
Underwater Positioning Study of Flight Recorder	193
Wen-Yang Liu, Richard Jih, Chi-Fang Chen	
Acoustic Relaxation Spectral Gas Detection Based on Deep Learning	201
Wei Zheng, Xue Wang, Junyu Ren, Ming Zhu	
Carbonate Reservoir Characterization by Joint Seismic Attributes	209
FAN LI, JING BA, CUN YU, WEI QIAN	
Characteristics of Waves in Gas Hydrate-Bearing Sediments	215
LIN LIU, XIU-MEI ZHANG, XIU-MING WANG	
Theoretical Modeling on Compressional Wave Velocity Variation with Temperature in Fluid-saturated Rocks	223
HUI QI ¹ JING BA ¹ CONG LUO ¹ RUPENG MA ¹	
Pre-stack Seismic Inversion of Tight Sandstone Reservoirs based on Levenberg-Marquardt Algorithm	229
Shuang Xiao, Jing Ba, Qiang Guo, Tiansheng Chen	
Analytical solutions of borehole acoustic fields for an eccentric drill collar in the monopole acoustic LWD	237
YUNJIA JI, XIAO HE, ZHIFENG SUN, HAO CHEN, XIUMING WANG	
Discrete Differential Forms for the Numerical Solution of Helmholtz Equations	247
G. WIMMER, S. LANGE	
Microseismic Location Based on Interferometric Imaging and Hilbert-Huang Transform	253
TING-TING ZHAN, HAO CHEN	

Simulation of Reflection and Scattering Waves in Acoustic Logging While Drilling	261
YUE PAN, XIAO HE, HAO CHEN	
Anisotropy Inversion Using a Small-diameter Acoustic Logging Tool with Separated Cross-dipole Sources	269
CHAO LI, HAO CHEN, XIAO HE, XIU-MING WANG, FU-QIANG ZENG	
Asymptotic ray tracing on seismic velocity models parameterized by sigmoidal shape functions for wave propagation modeling	275
SAULO P. OLIVEIRA, JUAREZ S. AZEVEDO, WILSON M. FIGUEIRÓ, RODRIGO A. GUIMARÃES, ANDRESSA DE OLIVEIRA, WINICIUS J. SILVA	
Experimental Verification of Acoustic Source Localization Technique in Heterogeneous Plates	283
SHENXIN YIN, JIA FU, TRIBIKRAM KUNDU, ZHIWEN CUI	
Finite Element Model Coupled With Lumped Parameter Elements	291
DANIEL GERT NIELSEN, JAKOB SØNDERGAARD JENSEN, VICENTE CUTANDA HENRIQUEZ, FINN THOMAS AGERKVIST	
Flexural Wave Bandgap Property in Thin Plates with Periodic Partial-Constrained-Layer Damping Coverage	299
Qi Qin, Mei-Ping Sheng, Fan Zhao, Zheng Fang	
High-order Solution of Nonlinear Acoustic Wave Equation for Isotropic Solids Using Perturbation and Finite Difference Methods	309
WENHAN LYU, XIANMEI WU, WEIJIANG XU, JIAYI CHEN	
Optimal Design on SAW Strain Sensing Device at High Temperature Employing AlN Piezoelectric Thin-film	317
Shuyao Fan, Wen Wang, Xueling Li, Yana Jia	
Optimization of LGS based Surface Acoustic Wave Device for Sensing High Temperature	325
Xueling Li, Wen Wang, Shuyao Fan	
Sensing Mechanism of Love Wave Based Ice Sensor Employing Structure of SiO₂/36°YX-LiTaO₃	333

YINING YIN, WEN WANG, YANA JIA

Research on 3D Temperature Distribution Reconstruction Based on Acoustics Tomography 341

Qian Kong, Genshan Jiang, Yuechao Liu, Jianhao Sun

The CMP stack processing method based on statistical properties of seismic random noise 349

Guihua Li, Jingqi Wang, jianguo Feng, Yun Xu

The Effect of Thin-layer Thickness on Seismic Peak Frequency 357

Cao Huan, Zhao Shuhong

The Importance of Strain Energy for Interpretation in Exploration Geophysics 369

Yu-Chiung Teng, Zhenxiang Fan, Guihua Li

Theoretical Study on Axial Impedances of Fluid-Filled Orthotropic Pipes 379

Mingzhu Su, Yudong Sun, Fang An, Xiaying Hao