

## 北京工业大学无损检测与评价研究所成立 20 周年纪念专刊

### 目 次

- 管道周向导波检测技术研究进展及展望 ..... 李子明, 何存富, 刘增华, 吴斌, 陈洪磊(641)
- 基于 FPGA 的 FIR 滤波器在超声导波接收系统中信号降噪的应用  
..... 何存富, 王森, 吴强, 刘增华, 吴斌(658)
- 回折线圈导线长度对表面波 EMAT 性能及缺陷检测的影响  
..... 邓鹏, 何存富, 吕炎, 刘增华, 焦敬品, 吴斌(665)
- 模具钢表面硬度的涡流无损表征方法 ..... 黄炎, 何存富, 刘秀成, 吴斌(672)
- 窄声束阵列传感器的仿真优化与研制 ..... 张学聪, 何存富, 吕炎, 吴斌(679)
- 基于微磁检测技术的钢杆淬硬层深度定量预测  
..... 吴斌, 王学迁, 刘秀成, 张瑞环, 邢鹏飞, 何存富(687)
- 基于分向半解析有限元法的纵向模态波动特性 ..... 唐楠, 吴斌, 何存富(693)
- 基于机电阻抗与超声导波综合技术的复合材料板损伤定位 ..... 刘增华, 曹瑾瑾, 吴斌, 何存富(699)
- 超声波与不同方向微裂纹的非线性相互作用数值仿真  
..... 焦敬品, 李海平, 吕洪涛, 何存富, 吴斌(708)
- 基于 RFID 的微带天线应变传感器的仿真分析  
..... 宋国荣, 文硕, 吕炎, 张斌鹏, 窦致夏, 吴斌, 何存富(716)
- 基于横波直探头的管道缺陷周向导波检测技术 ..... 吕炎, 郭程, 张学聪, 吴斌, 何存富(725)
- 基于超声透射成像技术的气/液两相流检测仿真 ..... 李楠, 徐昆, 刘达(735)

基于时间反转算子分解算法的板中导波小缺陷成像 ..... 邓 菲, 胡方朝, 张 偕(743)

单水滴附载的 Lamb 波宽频 Chirp 激励成像研究

..... 刘宏业, 金娇延, 范彦平, 马 莎, 刘增华, 何存富(749)

基于 AFAM 纳米多孔氧化硅薄膜超声幅值成像的试验研究

..... 张改梅, 曹 玥, 宋晓利, 何存富, 洪 富(757)

基于有限元法的一维球链中高非线性孤立波传播特性

..... 李明智, 刘秀成, 刘宗发, 王鹤莹, 肖 婷, 何存富, 吴 斌(764)

正交各向异性圆柱板中周向衰逝导波频散特性 ..... 张小明, 李 智, 禹建功(770)

复式( $4.8^2$ )晶格声子晶体的低频完全带隙实验研究 ..... 赵寰宇, 高晓霞, 刘 飞, 李凤莲(777)

频率分辨率对超声非线性系数的影响及修正方法 ..... 颜丙生, 赵俊杰, 汤宝平, 刘自然(783)

铝基玻璃棉层合板中 Lamb 波的频散特性及分层缺陷检测数值模拟

..... 吴英思, 刘 飞, 秉霞飞, 杜 兰, 杜文亮(789)

基于超声相控阵技术的重介旋流器内壁磨损研究 ..... 郑钢丰, 夏皖东, 周凯峰, 闫迎春(796)

执行编辑: 吕小红 责任编辑: 梁 洁 吕小红 郑筱梅 杨开英 张 蕾

本期基本参数: CN11-2286/T \* 1974 \* m \* A4 \* 160 \* zh \* P \* ¥20.00 \* 1 000 \* 21 \* 2018-05  
万方数据

**JOURNAL OF BEIJING  
UNIVERSITY OF TECHNOLOGY**

**Vol. 44**

**May 2018**

**No. 5**

---

**Special Issue on Commemorating the 20th Anniversary of  
Center of Nondestructive Testing and Evaluation in BJUT**

**CONTENTS**

- Research Progress and Prospects of Circumferential Guided Waves Inspection Technique in Pipes  
..... *LI Ziming, HE Cunfu, LIU Zenghua, WU Bin, CHEN Honglei*(641)
- Application of Signal Denoising by Using FIR Filter Based on FPGA in an Ultrasonic Guided Waves Receiving System ..... *HE Cunfu, WANG Sen, WU Qiang, LIU Zenghua, WU Bin*(658)
- Effect of Wire Length in Meander-line-coil on Performance of Surface Wave EMAT and Defect Detection  
..... *DENG Peng, HE Cunfu, LÜ Yan, LIU Zenghua, JIAO Jingpin, WU Bin*(665)
- Nondestructive Characterization of Surface Hardness in Mould Steels Using Eddy Current Method  
..... *HUANG Yan, HE Cunfu, LIU Xiucheng, WU Bin*(672)
- Optimization by Simulation and Development of Narrow Beam Array Transducer  
..... *ZHANG Xuecong, HE Cunfu, LÜ Yan, WU Bin*(679)
- Quantitative Prediction of Induction Hardened Case Depth in Steel Rods Based on Micro-magnetic Testing Technique ..... *WU Bin, WANG Xueqian, LIU Xiucheng, ZHANG Ruihuan, XING Pengfei, HE Cunfu*(687)
- Longitudinal Mode Propagation Based on Directional Semi-analytical Method  
..... *TANG Nan, WU Bin, HE Cunfu*(693)
- Damage Location of Composite Plates Using Integrated Technology Based on Electromechanical Impedance and Ultrasonic Guided Waves ..... *LIU Zenghua, CAO Jinjin, WU Bin, HE Cunfu*(699)
- Numerical Simulation of Nonlinear Interaction Between Ultrasonic and Micro-cracks in Different Directions  
..... *JIAO Jingpin, LI Haiping, LÜ Hongtao, HE Cunfu, WU Bin*(708)
- Simulation Analysis of a Microstrip Antenna Strain Sensor Based on RFID  
...万方数据 *SONG Guorong, WEN Shuo, LÜ Yan, ZHANG Binpeng, DOU Zhixia, WU Bin, HE Cunfu*(716)

Pipe Defects Detection Using Circumferential Guided Waves Based on Bulk Shear Wave Transducer

..... LÜ Yan, GUO Cheng, ZHANG Xuecong, WU Bin, HE Cunfu(725)

Simulation of Gas/Liquid Two-phase Flow Detection Based on Ultrasonic Tomography

..... LI Nan, XU Kun, LIU Kui(735)

Imaging Small Damages in Plates Using DORT Processing ..... DENG Fei, HU Fangchao, ZHANG Xi(743)

Research on Lamb Wave Imaging of a Sessile Water Droplet With Chirp Excitation

..... LIU Hongye, JIN Jiaoyan, FAN Yanping, MA Sha, LIU Zenghua, HE Cunfu(749)

Experimental Research on Ultrasonic Amplitude Imaging of Nano-porous Silicon Oxide Film Based on AFAM

..... ZHANG Gaimei, CAO Yue, SONG Xiaoli, HE Cunfu, HONG Fu(757)

Finite Element Simulation of Highly Nonlinear Solitary Waves in One-dimensional Granular Chain

..... LI Mingzhi, LIU Xiucheng, LIU Zongfa, WANG Heying, XIAO Ting, HE Cunfu, WU Bin(764)

Dispersion Characteristics of Circumferential Evanescent Guided Waves in Orthotropic Cylindrical Curved

Plates ..... ZHANG Xiaoming, LI Zhi, YU Jiangong(770)

Experimental Demonstration of Low-frequency Complete Bandgaps in Phononic Crystal With (4. 8<sup>2</sup>) Lattice

..... ZHAO Huanyu, GAO Xiaoxia, LIU Fei, LI Fenglian(777)

Influence of Spectral Resolution on Ultrasonic Nonlinear Parameter and Its Correction Method

..... YAN Bingsheng, ZHAO Junjie, TANG Baoping, LIU Ziran(783)

Numerical Simulation of Lamb Wave Dispersion Characteristics and Stratified Defect Detection in the Aluminum-based Glass Wool Lamination ..... WU Yingxi, LIU Fei, LI Xiafei, DU Lan, DU Wenliang(789)

Research on the Inwall Wear of Heavy Medium Cyclone Based on Ultrasonic Phased Array Technology

..... ZHENG Gangfeng, XIA Wandong, ZHOU Kaifeng, YAN Yingchun(796)

**Executive Editor:** LÜ Xiaohong

**Responsible Editors:** LIANG Jie, LÜ Xiaohong, ZHENG Xiaomei, YANG Kaiying, ZHANG Lei

万方数据