

Title:

Quantitative Correlation of Magneto-Mechanical Effect and Its Application in Quantitative Evaluation of Stress

力-磁效应定量关联关系及其应力定量评定应用研究

Abstract:

Magneto-Mechanical effect phenomenon and its application prospect in stress testing and evaluation. Research status in the quantitative correlation of magneto-mechanical effect. The latest research achievements of our team in the quantitative correlation of magneto-mechanical effect and its application in stress testing and evaluation.

力-磁效应现象及其在应力检测方面的应用前景，力-磁效应定量关联关系的研究现状，本团队在力-磁效应及其在应力检测方面的最新研究成果。



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Research area: Magneto-Mechanical Effect, Stress/ Strain

Testing and Evaluation, Electromagnetic Inverse Problem Calculation, Defect

Imaging and Sizing

研究领域: 力磁效应，应力/应变检测及评定，电磁拟问题计算，缺陷成像及量化

◆ Education Background and Research Experience:

2015.9- School of Mechanical Engineering, North Minzu University, China.
Professor, Doctoral Tutor

2008.9-2012.6 School of Aerospace, Xi'an Jiaotong University, China. Ph. D./ Engineering Mechanics

2003.9-2006.6 School of Mechanical Engineering, Xi'an Jiaotong University, China. M. S./

Mechanical Engineering

1993.9-1997.7 School of Mechanical Engineering, Jilin University, China. B. S./ Mechanical Engineering

◆ **The Main Research Projects:**

1) National Natural Science Foundation of China (NSFC)-Studies on correlation and application of noncoaxial magnetic field on the magneto-mechanical effect of ferromagnetic steel, 51367001, 2014.1-2017.12. **(Director)**

2) National Natural Science Foundation of China (NSFC) - Sizing of 3-D defects with magnetic flux leakage signals based on inversion algorithm of magnetic charge, 51507005, 2016.1-2018.12. **(Director)**

3) National Magnetic Confinement Fusion Program of China-Key technology research on in-pile parts of Magnetic confinement fusion reactor, 2013GB113005, 2013.3-2018.3. **(Participant)**

◆ **Major Publications:**

[1] **Li HM**, Chen ZM, Li Y. Characterization of damage-induced magnetization for 304 austenitic stainless steel. Journal of Applied Physics, 110(11): 114907, 2011. (SCI, JCR Q2)

[2] **Li HM**, Chen ZM, Li Y, et al. Dependence of deformation-induced magnetic field on plastic deformation for SUS304 stainless steel. International Journal of Applied Electromagnetics and Mechanics, 38(1): 17-26, 2012. (SCI, JCR Q3).

[3] **Li HM***, Chen ZM, Quantitative analysis of the relationship between non-uniform stresses and residual magnetizations under geomagnetic fields. AIP Advances, 6: 075309-1-6, 2016. (SCI, JCR Q3).

[4] **Li HM***, Chen ZM. Sizing of defect using metal magnetic memory signal based on the reconstruction algorithm. IEEE Access, 6(1): 58543 - 58548 (SCI, JCR Q1).