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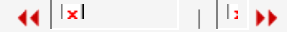
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梯度材料中任意形孔对反平面剪切波散射与动应力

赵磊^{1,3}, 胡超^{1,2}

1. 同济大学航空航天与力学学院, 上海 200092;
2. 扬州大学建筑科学与工程学院, 扬州 225127;
3. 航天科工集团公司三十一所, 北京 100074

SCATTERING OF ANTI-PLANE SHEAR WAVES AND DYNAMIC STRESS CONCENTRATIONS IN EXPONENTIALLY GRADED MATERIALS WITH A CAVITY

ZHAO Lei^{1,3}, HU Chao^{1,2}

1. School of Aerospace Engineering and Applied mechanics, Tongji University, Shanghai 200092, China;
2. College of Civil Science and Engineering, Yangzhou University, Yangzhou 225127, China;
3. The 31st Research Institute of CASIC, Beijing 100074, China

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摘要

该文基于弹性动力学理论,采用复变函数与保角映射方法,研究了指数梯度材料中任意形孔洞对弹性波的散射与动应力集中,给出了问题的解析解.并以求解椭圆孔动应力集中系数为例,分析了入射波数和材料非均匀参数等对椭圆孔动应力分布的影响.

关键词: 弹性波散射与动应力集中 指数梯度材料 任意形孔洞 复变函数 保角映射方法

Abstract:

Based on elastodynamics, employing the complex function and conformal mapping method, elastic wave scattering and dynamic stress concentrations in exponentially graded materials with a cavity of arbitrary shape have been investigated and an analytical solution of the problem has been derived. The numerical results of the dynamic stress concentration factors around the elliptical cavity are presented as an example. The effects of elastic wave-number and heterogeneous parameters of the materials on the dynamic stress concentration factors are analyzed.

Key words: scattering of elastic waves and dynamic stress concentration exponentially graded materials cavity of arbitrary shape complex function conformal mapping method

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通讯作者: 胡超(1961—),男,哈尔滨人,教授,博士,博导,从事结构动力学与振动控制、弹性波散射与动应力、转子动力学研究(E-mail: chaohu@mail.tongji.edu.cn). E-mail: chaohu@mail.tongji.edu.cn

作者简介: 赵磊(1980—),男,安徽淮北人,技术员,硕士,从事空间材料力学与振动控制、力热多场耦合动力学研究(E-mail: zhaolei2001cn@yahoo.com.cn).

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地址：北京清华大学新水利馆114室 邮政编码：100084

电话：(010)62788648 传真：(010)62788648 电子信箱：gclxbjb@tsinghua.edu.cn

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