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金属蜂窝构件光学方法的无损检测研究

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RESEARCH OF OPTICAL METHOD FOR NON-DESTRUCTIVE DETECTION ON METALLIC HIVE LIKE ASSEMBLY

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摘要

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摘要 用理论和实验分析比较了全息干涉术和剪切散斑干涉术对金属蜂窝构件的无损检测。并从理论上推导了剪切散斑干涉条纹的强度分布,证明了随着加载量的增大,条纹变密的程度较全息干涉条纹缓慢。剪切散斑干涉条纹灵敏度只有较大的可调性,加载范围大为加宽。实验观察与理论分析一致。

关键词: 全息干涉测量 非破坏性检验 剪切 激光干涉测量

Abstract: The speckle shearing interferometry applied in optical nondestructive detection on composite materials is accompanied with a significant wide range of loading that will be of bene-fit to such whole-field observations that no defect could be avoided Intensity distribution of shearing interferometric fringe(equistrain fringe)is presented in a more general way,which shows that its density increases more slowly than that of holographic interferometric fringe(equi-displacement fringe)as the loading increases.An adjustable sensitivity characterized by the shearing fringe itself will additionally broaden the loading range greatly.Experimental obserVations agree with the analyses.

Keywords: holographic interferometry nondestructive tests shearing laser interferometry

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