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基于神经网络的智能复合材料损伤评估系统

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SMART COMPOSITE DAMAGE ASSESSMENTSYSTEM BASED ONTHE NEURAL NETWORK

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摘要 | 参考文献 | 相关文章

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摘要 介绍了一种复合材料损伤评估的新系统。该系统由埋入光纤传感器阵列、形状记忆合金丝和K ohonen 自组织神经网络处理器组成。由埋入光纤传感器阵列实现对材料损伤的检测,神经网络由TMS320C25 高速并行处理器和IBMPC/386组成的高速并行分布处理器进行模拟,实现传感器输出信号的实时处理,并产生相应的控制信号激励形状记忆合金丝（SMA）,以改变材料的应力状态,延缓材料的破坏。

关键词： 神经网 复合材料 破坏程度评估

Abstract： A novel approach is introduced for composite damage assessment.The system consists of an embedded fiberoptic sensor array,Shape Memory Alloy(SMA)and Kohonen Self-Organizing Maps(SOM) neural network processor. The fiberoptic sensor array embedded in the com-posite structure can be used to detect the damages in the composite。The neural network is simu-lated by high speed Parallel Distributed Proeessing(PDP) which consists of TMS320C25 high speed processor and IBM PC/386 computer, deals with the output signals of sensors on time,and controls and actuates the shape memory alloy wires to change the strain state of the compo-site,So that,the damage of composite will be delayed。

Keywords： neural nets composites damage assessment

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