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Minimum Attenuation Frequency Selection Method for Composite Tailplane Structural Health Monitoring

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Practical and reliable structural health monitoring for composite structures using PZT based active sensing scheme significantly depends on effective frequency selection. It is found that the attenuation coefficient of the guided wave may become disproportionate to frequency in a real application when the structure under concern is loaded, which may cause difficulties to select ideal frequencies for the diagnostic guided waves. Hence, this paper presents a surface fitting-based frequency selection method for composite plates with attached or embedded sensor network to automatically realize in-situ actuation frequency selection. Using this method the expression of attenuation coefficient can be obtained by polynomial fitting. And hence the frequencies of the guided wave with maximum amplitude can be found in the searched frequency range.

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