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层合厚板混合状态Hamiltonian元的半解析解

邹贵平, 唐立民

大连理工大学工程力学系, 大连, 116023

A SEMI-ANALYTICAL SOLUTION FOR LAMINATED COMPOSITE PLATES IN HAMILTON SYSTEM

Zou Guiping, Tang Limin

Research Institute of Eng Mech, Dalian University of Technology, Dalian, 116023

摘要

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摘要 给出任意角铺设或斜交铺设层合厚板的混合状态Hamiltonian正则方程及其有效的半解析法。该方法在板厚方向未作任何有关应力或位移的人为假设,采用状态空间法给出解析解答,且通过状态转移矩阵的建立,保证了层间位移和应力的连续,减少了计算中未知量数目。

关键词: 层压板 哈密顿函数 半解析法

Abstract: The mixed state Hamilton canonical equation and a semi-analytical solution are presented for analyzing the laminated composite plates. The method accounts for the separation of variables, the discrete element is employed in the plane of lamina, and the exact solution in thick direction is derived by state space approach. Furthermore, for applying the transfer matrix method, the continuity of interlaminar stresses and displacements is satisfied, the relational expression at the top and bottom plate surfaces is established, and then the spot method is employed. The present results are compared with those obtained using the classical theory and high-order theory.

Keywords: laminates. Hamiltonian functions semi-analytical solution

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