

ENGLISH SUMMARY

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ON THE THERMAL EXPANSION COEFFICIENTS OF
A SYMMETRIC BALANCED LAMINATE

The effect of the lamination angle and thermoelastic coefficients of the laminae used on the coefficients of thermal expansion (CTEs) of a symmetric balanced laminate is under consideration. The expressions of CTEs of a $[\theta/-\theta]_s$ laminate are developed into a form where their dependence on lamination angle and on thermoelastic constants can be seen explicitly. Using these new expressions values of lamination angle giving value zero or extrema for CTEs are studied. It is e.g. shown that angles giving extrema for CTEs of a laminate are independent of the CTEs of laminae from which laminate is constructed. Depending on the relative value of G_{12} there can be 2, 1 or no extrema in the open interval $(0^\circ, 90^\circ)$ in addition to the trivial ones at 0° and 90° .

Heinisuo, Markku

ANALYSIS OF A PILE BY USING THE
MICRO-COMPUTER

This paper presents an exact finite element method for the analysis of a compressed pile when the soil parameter (Winkler-type) and the axial load are as constant within an element. The pile is supposed to be a Bernoulli-Euler-type beam and the geometrical non-linearity of a beam is taken into account. Examples are given of the kinds of parametric studies that can be done using the program. Some possibilities for expanding the program are presented. The numerical results of the program are compared to those results available in the literature.