Int. J. Solids Structures, 1973, Vol. 9, pp. 693 to 695. Pergamon Press. Printed in Great Britain

COMMENTS ON THE PAPER: ADJOINT VARIATIONAL METHODS IN NONCONSERVATIVE STABILITY PROBLEMS [1]

THE authors have presented an interesting extension of the use of adjoint variational methods in nonconservative stability problems. The present comments do not concern the new work but rather the authors' comments on other approximate methods.

Prasad and Herrmann state that the local potential method has not been used to treat nonconservative stability problems. However, the present writer, in a 1966 paper [2], gave a formulation of Hamilton's Principle for nonconservative mechanical systems which is essentially a local potential method. The new formulation of Hamilton's Principle makes explicit use of the fact that during the virtual displacement of a mechanical system the forces acting on the system do not vary *even* if they are displacement dependent. Consequently, certain "displacement" terms in the functional of the extended Hamilton's Principle are not varied, just as certain temperature terms are not varied when the local potential method is applied to thermal systems. It would seem that the physical basis for the writer's work, the principle of virtual work, is as clear as the physical basis for the local potential method when used for thermal systems.

The present writer's work has been used as the basis of a finite element treatment of nonconservative problems of elastic stability by Barsoum [3].

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REPLY TO THE COMMENTS BY M. LEVINSON CONCERNING THE PAPER: ADJOINT VARIATIONAL METHODS IN NONCONSERVATIVE STABILITY PROBLEMS

THE authors would like to thank Dr. M. Levinson for his comments.

The concept of local potential includes in the Lagrangian, functions evaluated at the steady state and thus not subject to variation. This Lagrangian is a negative semidefinite