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**New modal synthesis technique using mixed modes.** (English) [Zbl 0911.73038](#)

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Summary: We introduce a new modal synthesis technique using mixed modes, providing two criteria for determining the truncation frequency of system synthesis modes. These have been demonstrated in detail by numerical examples. The key point of the method is as follows. The exact residual modes containing the effects of higher-order, free-interface modes are expressed analytically in terms of some lower-order, fixed-interface modes, and then the substructural displacements are expressed accurately in terms of some lower-order, mixed modes, i.e., the linear combinations of the lower-order, fixed-interface modes and lower-order, free-interface modes, instead of the assumed substructural displacements employed in general modal synthesis, so that only linear synthesis equations are involved in the method, although the contributions of all higher-order modes are included.

**MSC:**

[74H45](#) Vibrations in dynamical problems in solid mechanics

**Keywords:**

[criteria for determining truncation frequency](#); [substructural displacements](#); [linear synthesis equations](#)

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