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Modeling and numerical analysis of junctions between elastic structures. (English)

Zbl 0707.73045

Industrial and applied mathematics, Proc. 1st Int. Conf., ICIAM, Paris/Fr. 1987, 62-74 (1988).

Summary: [For the entire collection see [Zbl 0664.00003](#).]

We consider a problem in three-dimensional linearized elasticity, posed over a domain consisting of a plate with thickness 2ϵ , inserted into a solid whose Lamé constants are independent of ϵ . If the Lamé constants of the material constituting the plate vary as ϵ^{-3} , the solution of the three-dimensional problem converges, as ϵ approaches zero, to the solution of a coupled, “pluri-dimensional” problem of a new type, posed simultaneously over a three-dimensional open set with a slit and a two-dimensional open set. Other problems are also amenable to the same method, such as junctions between plates and rods, and folded plates.

MSC:

- [74E30](#) Composite and mixture properties
- [74S30](#) Other numerical methods in solid mechanics (MSC2010)
- [74P10](#) Optimization of other properties in solid mechanics
- [65K10](#) Numerical optimization and variational techniques

Cited in 1 Document

Keywords:

limit variational problem; three-dimensional linearized elasticity; coupled, “pluri-dimensional” problem; three-dimensional open set with a slit; two-dimensional open set