Kolloquium 🖌



Mechanik

Universität Dortmund

Vortragsankündigung

Referent:	W. J. DRUGAN Department of Engineering Physics University of Wisconsin-Madison Madison, WI, USA
Thema:	STABILITY AND BOUND-EXCEEDING PERFORMANCE OF ELASTIC COMPOSITE MATERIALS HAVING A NEGATIVE-STIFFNESS PHASE
Ort:	Ruhr-Universität Bochum Raum IA 3/21
Zeit:	Dienstag, den 28.11.2006 14:15 Uhr

Inhalt:

The well-known bounds on attainable overall moduli of elastic composite materials are based on the assumption that all phases of the composite material are positive-definite, presumably for stability reasons. I will prove that a composite material can have nonpositive-definite (negative stiffness) inclusions and yet be stable overall, even under pure traction (dead load) boundary conditions, thus rendering existing bounds inoperative. I will show theoretically how the (negative) inclusion moduli can be chosen so that the overall composite moduli far exceed all existing bounds, and I will show experimental results of my University of Wisconsin colleague R. S. Lakes that exhibit such effects.

Veranstalter: O.T. Bruhns, K. Hackl (Ruhr-Universität Bochum) H. Obrecht, B. Svendsen, K. Thermann (Universität Dortmund)

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