



Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

Prediction of Vibration Transmission within Periodic Bar Structures: Analytical Vs Numerical Approach

Domadiya, Parthkumar Gandlal; Andersen, Lars Vabbersgaard; Sorokin, Sergey

Published in:
BNAM 2012

Publication date:
2012

Document Version
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Domadiya, P. G., Andersen, L. V., & Sorokin, S. (2012). Prediction of Vibration Transmission within Periodic Bar Structures: Analytical Vs Numerical Approach. In *BNAM 2012: Joint Baltic-Nordic Acoustics Meeting* Nordic Acoustic Association.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

**Prediction of Vibration Transmission within
Periodic Bar Structures: Analytical Vs Numerical
Approach**

*Parthkumar G. Domadiya, Lars V. Andersen, Sergey V.
Sorokin*

The present analysis focuses on vibration transmission within semi-infinite bar structure. The bar is consisting of two different materials in a periodic manner. A periodic bar model is generated using two various methods: The Finite Element method (FEM) and a Floquet theory approach. A parameter study is carried out regarding the influence of the number of periods at various frequencies within a semi-infinite bar, stop bands are illustrated at certain periodic intervals within the structure. The computations are carried out in frequency domain in the range below 500 Hz. Results from both of the above methods are compared and analyzed