



<b>Title</b>	<b>Numerical study on scattering and absorption by periodically arranged acoustical treatment at oblique incidence</b>
<b>Author(s)</b>	<b>Cheung, SC; Wang, C; Huang, L</b>
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12:20

**2aNSb2. Numerical study on scattering and absorption by periodically arranged acoustical treatment at oblique incidence.** Shuk Ching Cheung, Chunqi Wang, and Lixi Huang (Department of Mechanical Engineering, The University of Hong Kong, Pokfulam Road, Hong Kong, cindycheung@hku.hk)

The propagation of sound over an impedance strip has been a topic of interest in sound abatement design. Excess absorption by the periodical arrangement of two or more distinct impedance conditions has been shown by various theoretical and experimental studies. It is believed that the scattering by the impedance discontinuities can enhance the absorption in some

designs. This gives motivation to design a more elaborate set of impedance distribution within one periodic module. In this study, the scattering and absorption by periodically-arranged acoustical treatment at oblique incidence is investigated using the spectral method of Chebyshev collocation. The effects on the sound absorption and reflection by the length of the repeating unit, the angle of incidence and scattering characteristics due to the discontinuities of the acoustical impedance are analyzed. Central to the method is the derivation of out-going waves which allows scattered sound of all directions to leave the computational domain without reflection. The full picture of scattering is captured and analyzed using a rather coarse set of grid suitable for further optimization studies.

TUESDAY MORNING, 15 MAY 2012

HALL C, 9:20 A.M. TO 12:20 P.M.

### Session 2aNSc

#### Noise and Animal Bioacoustics: Future of Acoustics: East and West

Brigitte Schulte-Fortkamp, Cochair  
*schulte@mach.ut.tu-berlin.de*

Michael Buckingham, Cochair  
*mjb@ucsd.edu*

L. Cheng, Cochair  
*mmlcheng@inet.polyu.edu.hk*

#### *Invited Papers*

9:20

**2aNSc1. Social networks and networking of scientists: benefits and drawbacks.** Betina Hollstein (Hamburg University Chair of Microsociology, School of Business, Economics and Social Sciences Welckerstr. 8, 20354 Hamburg, Germany, betina.hollstein@wiso.uni-hamburg.de)

Topic of the presentation is the contribution of social networks and social network analysis with regard to global change and the future of Acoustics. What are the outcomes of cooperation and networking of scientists and how is networking be enhanced? The paper elaborates on different types of social networks (among scientists and among science and other societal actors, like industry, political actors etc.) and its respective outcomes. How do networks matter and what are gains and possible losses of networking? Emphasis is placed on different cultures and contexts of networking. With respect to governance of networks I distinguish between "organic" networks and "organized" networks. Finally, consequences for networking between scientists are discussed.

9:40

**2aNSc2. Facts and ideas for the development of an integrated sound and health effects research in a globalized world.** Peter Lercher (Division of Social Medicine, Medical University of Innsbruck, Austria, Peter.Lercher@i-med.ac.at)

The environmental health effects research in environmental acoustics often reveals substantial differences in the obtained results which consequently lead to different conclusions and implementations in administration and policy. This paper intends to discuss some of the possible reasons underlying these discrepant results from a socio-cultural and social medicine viewpoint. For this purpose three complementary approaches are outlined and respective examples are presented. First, a sound source related perspective is investigated to explain potential differences in health outcomes. Second, a context related perspective is used to show empirical evidence for the variety of the contextual frameworks possibly responsible for observed differences in outcomes or importance of moderating factors. Eventually, with a health outcome related perspective possible differences in the underlying morbidity structure and health concepts are explored as potential sources for discrepant results.