

Aims and Scope

The University of Maryland Baltimore County in collaboration with the Stress and Vibration Group of the Institute of Physics and the Technical Committee on Vibration and Sound of the American Society of Mechanical Engineers is hosting a meeting on the mechanics of systems employing slender structural elements. This conference forms a continuation of a successful meeting series on the Mechanics of Slender Structures staged by the University of Northampton in 2004 and 2006 ([website: http://www.eng.nene.ac.uk/~conf2006/Symposium.htm](http://www.eng.nene.ac.uk/~conf2006/Symposium.htm)).

Applications of slender structures include terrestrial, marine and space systems. Moving elastic elements such as ropes, cables, belts and tethers are pivotal components of many engineering systems. Their lengths often vary when the system is in operation. The applications include vertical transportation installations and, more recently, space tether propulsion systems. Traction drive elevator installations employ ropes and belts of variable length as a means of suspension, and also for the compensation of tensile forces over the traction sheave. In cranes and mine hoists, cables and ropes are subject to length variation in order to carry payloads. Tethers experiencing extension and retraction are important components of offshore and marine installations, as well as being proposed for a variety of different space vehicle propulsion systems based on different applications of momentum exchange and electrodynamic interactions with planetary magnetic fields. Furthermore, cables and slender rods are used extensively in civil engineering; in cable-supported bridges, guyed masts and long-span roofs of buildings and stadia. Also, suspended cables are applied as electricity transmission lines. Chains are used in various power transmission systems that include such mechanical systems as chain drives and chain saws. Moving conveyor belts are essential components in various material handling installations and textile manufacturing systems involve slender continua such as yarns composed of staple fibres.

The behaviour of these elements plays a significant role in the performance of the host structure and a holistic approach is needed in the analysis and design of the entire

system. The symposium will bring together experts from various fields: structural mechanics, thermo-mechanics, dynamics, electrodynamics, vibration and control, structural health monitoring, artificial intelligence, and materials science to discuss the current state of research as well as rising trends and direction for future research in the area of mechanics of slender structures. The meeting is aimed at improving the understanding of structural and thermo-mechanical properties and behaviour of slender structures. More specifically, the methods for the suppression of adverse dynamic responses of such systems will be addressed. The scope covers analytical, numerical, and experimental research into the mechanics of ropes, cables, tethers, chains, yarns and fibres as well as their interactions with the host structure in various engineering applications.

Topics

Technical papers addressing the following and related subjects are invited for submission:

- Acoustic emission in damage detection
- Active and passive damping strategies
- Composite materials
- Contact and friction models
- Dynamic stability
- Electro-mechanical and magneto-mechanical interactions
- Flow-induced vibrations and fluid-structure interactions
- Inspection, monitoring and sensor techniques
- Intelligent materials and structures
- MEMS technology
- Non-linear dynamic interactions
- Non-stationary dynamic phenomena
- Stochastic dynamics
- Stress and fatigue
- Structural integrity and damage assessment
- Testing methods
- Thermo-mechanical behaviour
- Residual strength and endurance prediction
- Vibro-acoustics
- Vibration and control

Abstracts and Papers

Abstracts of up to 300 words are invited in electronic format and should be submitted as an MS Word file via e-mail to the symposium office before 8 February 2008. The abstract should state the authors' names, affiliations and e-mail address, the title of the paper, the objectives, methodology employed, the main results, and the conclusions of the research. Notification of acceptance of the abstracts will follow by 15 February 2008. If the abstract is accepted, authors will be asked to submit their paper no later than 28 March 2008. Copies of the abstracts will be available in booklet format and the papers will be included in the CD-ROM of the conference proceedings.

Opening Address

C. Dan **Mote**, Jr., President, University of Maryland, College Park

Keynote Speakers

Keynote addresses will be given by renowned international experts:

Richard **Chaplin**, University of Reading, U.K.
Dewey **Hodges**, Georgia Institute of Technology, U.S.A.
Andrei **Metrikine**, Delft University of Technology, The Netherlands
Michael **Paidoussis**, McGill University, Canada
Noel **Perkins**, University of Michigan, U.S.A.
André **Preumont**, Université Libre de Bruxelles, Belgium
Randy **Roberts**, Otis Elevators, U.S.A.
Jonathan **Wickert**, Iowa State University, U.S.A.

Key Dates

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| Deadline for submission of abstracts: | 8 Feb 2008 |
| Authors notified of acceptance of abstracts: | 15 Feb 2008 |
| Submission of final papers: | 28 Mar 2008 |
| Conference dates: | 23-25 Jul 2008 |

Venue and Accommodation

The symposium will be held at the University of Maryland Baltimore County, U.S.A. Accommodation will be available at local hotels.

Registration

The deadline for registration is 2 May 2008. Registration form and details will be available soon from the conference website:

<http://www.eng.nene.ac.uk/~moss2008/index.html>

Organising Committee

Matthew **Cartmell**, University of Glasgow, U.K.
Stefan **Kaczmarczyk**, University of Northampton, U.K.
Jonathan **Wickert**, Iowa State University, U.S.A.
Weidong **Zhu**, University of Maryland BC, U.S.A. (Host)

Symposium Office

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Peter **Hagedorn**, Technical University of Darmstadt, Germany
Jack **Hale**, University of Newcastle, U.K.
Yoram **Halevi**, Technion, Israel
Gert van der **Heijden**, University College London, U.K.
Karen **Holford**, Cardiff University, U.K.
Wim van **Horsen**, Delft University of Technology, The Netherlands
Erdem **Imrak**, Technical University of Istanbul, Turkey
Dan **Inman**, Virginia Tech, U.S.A.
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Stewart **McWilliam**, University of Nottingham, U.K.
Wieslaw **Ostachowicz**, PASci, Poland
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Noel **Perkins**, University of Michigan, U.S.A.
Christophe **Pierre**, McGill University, Canada
Christopher **Rahn**, Penn State University
Randy **Roberts**, Otis Elevators, U.S.A.
Ahmed **Shabana**, University of Illinois, Chicago, U.S.A.
Steve **Shaw**, Michigan State University, U.S.A.
Rory **Smith**, ThyssenKrupp Elevator Corporation, U.S.A.
Chin An **Tan**, Wayne State University, U.S.A.
Yoshiaki **Terumichi**, Sophia University, Japan
Robin **Tucker**, Lancaster University, U.K.
Irina **Trendafilova**, University of Strathclyde, U.K.
Wolfram **Vogel**, DRAKO, Germany
Loc **Vu-Quoc**, University of Florida, U.S.A.
Kon-Well **Wang**, Penn State University, U.S.A.
Marian **Wiercigroch**, University of Aberdeen, U.K.
Jean **Zu**, University of Toronto, Canada

First Announcement and Call for Papers

Mechanics of Slender Structures **MoSS 2008**

23 - 25 July 2008

Hosted by

**University of Maryland
Baltimore County, U.S.A.**

In collaboration with

**Institute of Physics
Stress and Vibration Group**

and



Technical Committee on Vibration and Sound

Co-sponsored by



Lift and Escalator Industry Association



Conference website:

<http://www.eng.nene.ac.uk/~moss2008/index.html>