Young Acousticians Network - Special session

BNAM 2016 - Baltic and Nordic Acoustic Meeting

This bi-annual meeting will be hosted by **KTH - Royal Institute of Technology**, in Stockholm, Sweden, from June 20 to 22, 2016.

This dates precede the most concurred Scandinavian celebration: Midsommar! (summer solstice).

As the Stockholm Archipelago bathes under a near-24-hour summer warm sun,

the BNAM 2016 Meeting will present the finest acoustic research in the Baltic and Nordic countries.

The YAN will host a special session,

with invited speakers, such as

Prof. Mats Åbom, Ph.D. from KTH, Vice-president of the European Acoustic Association (EAA),

and **Eng. Klas Hagberg** (WSP) talking about the **status of the job market in acoustic engineering worldwide, and its perspectives**.

Also, two special keynotes will be held:

Extensive Unified-Domain Simulation of the Human Voice: Overview and Outcomes of the EUNISON Project

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Physically, voice involves vibrating, deforming, colliding elastic solids; complex interactions between laminar and turbulent airflow; and sound waves resonating in a contorting duct. Typically, these mechanisms have hitherto been studied one at a time, using disparate tools and often drastic approximations, for each of the subproblems. Recent advances in numerical modelling techniques have increased the possibility of simulating the combined biomechanics, aerodynamics and acoustics in a unified numerical domain. Although the logistical and computational demands are formidable, these are more an obstacle of scale than of principle. In the EUNISON project, the goal has been to develop an extendable voice simulation platform which to an unprecedented degree is based on first principles of physics. Seven research groups across Europe collaborated in this venture, with access to massively parallel computers. Throughout, numerical models were validated against physical replicas with experimentally quantified properties. Proof-of-concept solutions were produced for simulation and rendering, in three dimensions plus time, the physics of the voice, including its acoustic output. A range of open-source only platforms has been used, including FENICS for FEM simulations and ArtiSynth for the biomechanics. Control data for the simulation represent at different levels the geometry, muscle activations, or strings of phonemes. While the workflows still remain to be streamlined, it is hoped that research and education in voice science thus have taken a significant step closer to reality. The work package leaders were Sten Ternström (project coordinator), Oriol Guasch (scientific coordinator), Johan Hoffman, Stefan Becker, Xavier Pelorson, Ramon Codina, Olov Engwall and Francesc Alías. (EU FP7 FET-Open Project 308874, 2013-2016, www.eunison.eu)

Hearing and speech communication

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After a short introduction about our human hearing system and its particular ability to process speech, this presentation will focus on how noise and reverberation can impede speech communication. I will present recent data on estimated speech-to-noise ratios in realistic sound environments [1] and discuss some factors that will affect the required speech-to-noise ratio for effective speech communication. These factors include hearing loss, cognitive abilities, and language background.

[1] Smeds K, Wolters F, Rung M. (2015) Estimation of signal-to-noise ratios in realistic sound scenarios. *J Am Acad Audiol* 26: 183-96.

Please **forward this message** to any **PhD students, Master students, Engineers or Consultants in acoustics**,

so that they can participate to this event in this magnificent setting.

For info, please contact us,

Juan , Laura, and Oskar

YAN - EAA

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