

Acoustics Week in Canada 2016  
The Sutton Place Hotel  
Vancouver, British Columbia

  
CANADIAN ACoustical ASSOCIATION  
ASSOCIATION CANADIENNE D'ACOUSTIQUE



## POST-CONFERENCE REPORT

### ACOUSTICS WEEK IN CANADA 2016

**September 21-23, 2016**

#### Organizing Committee

Conference Co-chairs: Kathy Pichora-Fuller, University of Toronto  
Clair Wakefield, Wakefield Acoustics/RWDI  
Assistant to Co-chairs & Website Manager: Philip Tsui, Wakefield Acoustics/RWDI  
Technical Program Co-chairs: Murray Hodgson, U of British Columbia  
Bryan Gick, U of British Columbia  
Exhibits/Sponsorship Co-chairs: Mehrzad Salkhordeh, dB Noise Reduction  
Bernard Feder, HGC ENGINEERING  
Event Coordination Chair: Maureen Connelly, BCIT  
Proceedings Preparation: Cécile Le Cocq, Université du Québec (ÉTS)  
Jérémie Voix, Université du Québec (ÉTS)  
Student Presentation Prize Coordination: Hugues Nélisse, IRSST

Conference Website: <http://awc.caa-aca.ca>



Semaine canadienne d'acoustique 2016  
Hôtel The Sutton Place  
Vancouver, Colombie-Britannique



## RAPPORT POST-CONFÉRENCE

### SEMAINE CANADIENNE DE L'ACOUSTIQUE 2016

**21 au 23 Septembre 2016**

#### Comité organisateur

Présidents de la conférence: Kathy Pichora-Fuller, University of Toronto  
Clair Wakefield, Wakefield Acoustics/RWDI  
Assistant aux co-présidents & site web: Philip Tsui, Wakefield Acoustics/RWDI  
Directeurs scientifiques: Murray Hodgson, U of British Columbia  
Bryan Gick, U of British Columbia  
Coordinateurs exposants: Mehrzad Salkhordeh, dB Noise Reduction  
Bernard Feder, HGC ENGINEERING  
Coordinateur de la conférence: Maureen Connelly, BCIT  
Préparation des actes: Cécile Le Cocq, Université du Québec (ÉTS)  
Jérémie Voix, Université du Québec (ÉTS)  
Coordinateur des prix des présentations étudiantes: Hugues Nélisse, IRSST

Siteweb de la conférence: <http://awc.caa-aca.ca>



**Thanks to Everyone –  
AWC in Vancouver was a great success!**

**Merci à tout le monde –  
AWC à Vancouver a été un grand succès!**

Thanks to over 170 delegates for making Acoustics Week In Canada 2016 such a great success!

The program featured three plenary invited talks and was packed with a full slate of 121 contributed papers in 21 different sessions. The presentations covered a wide range of topics showcasing the latest work of researchers, consultants and students. Bursaries were awarded to 26 student presenters.



There were 8 generous sponsors that helped to pay for every coffee break and lunch, as well as the opening reception and the banquet, AV and more. The exhibit hall was sold out with 16 exhibitors providing information about and demonstrations of acoustical equipment and services. See the list of sponsors and exhibitors below.



At the banquet, in addition to the traditional presentation of the CAA awards and prizes (see report of Hugues Nélisse), we also congratulated Frank Russo (CAA President) on receiving the 2016 Early Career Award at the 22<sup>nd</sup> International Congress on Acoustics (ICA) held in Buenos Aires on September 5-9<sup>th</sup>. Mike Stinson (left in photo below), long-time CAA member and the Secretary General of the ICA spoke about Frank's achievements and the significance of Frank's ICA award.



We would like to thank the members of the Organizing Committee (see list above) for the hard work and dedication required to plan the conference.

Nous tenons à remercier tout le comité d'organisation pour le travail acharné et le dévouement nécessaire pour planifier la conférence.

Kathy Pichora-Fuller and Clair Wakefield  
Conference Chairs



## Plenary Lectures Séances plénières et scientifiques

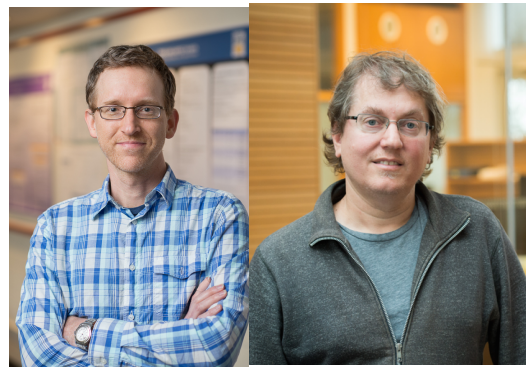
**Judy R. Dubno** (left) from the Medical University of South Carolina talked about age-related hearing loss and how interdisciplinary teams can advance research and practice in acoustics.

**Judy R. Dubno** (à gauche), de la Medical University of South Carolina, a parlé de la perte d'audition associée au vieillissement, et comment les équipes interdisciplinaires peuvent faire avancer la recherche et les pratiques en acoustique.



**Thais Morata** (right) from the National Institute for Occupational Safety and Health (NIOSH) and the Center for Disease Control (CDC) talked about hearing loss prevention in 2016 and modern ways to communicate to the public about hearing health and noise.

**Thais Morata** (à droite) de la National Institute for Occupational Safety and Health (NIOSH), et du Center for Disease Control (CDC) a parlé de la prévention de la perte auditive en 2016 et des méthodes modernes pour parler en publique de la santé auditive et du bruit.



**Bryan Gick** (left) and **Sid Fels** (right) from the University of British Columbia talked about "Interdisciplinary approaches for advancing articulatory speech theory and synthesis".

**Bryan Gick** (à gauche) et **Sid Fels** (à droite), de l'University of British Columbia, ont parlé des approches interdisciplinaires pour l'avancement des théories articulatoires de la parole et de leur synthèse.



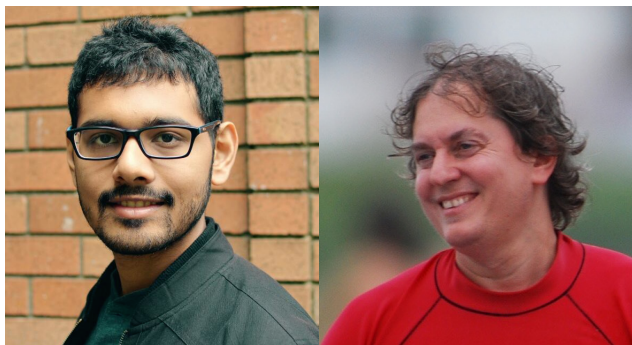
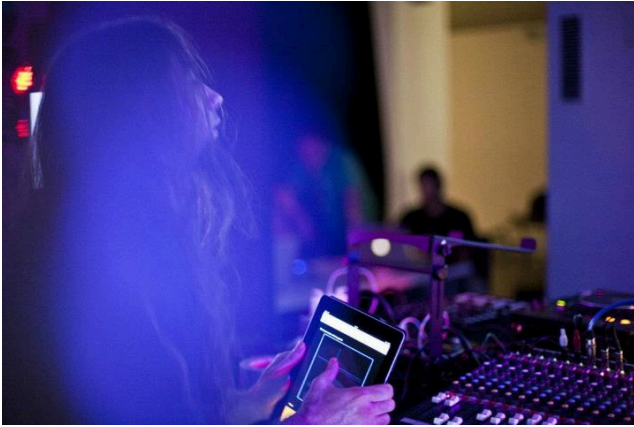
## The Post-banquet Demonstration/Performance

### Performing in Flatland

Victor Zappi, Arvind Vasudevan, Sidney Fels

*Performing in Flatland* is an audio/visual performance inspired by the physics of sound and, in particular, by the theory of pressure wave propagation in space.

Sound is part of our everyday lives, we are constantly immersed in it and our brain is capable of retrieving an impressive amount of information from it. Our relationship with sound is an audio/visual experience. In *Performing in Flatland*, we try to explore this paradigm more deeply, by means of coupling sound and music with a realistic visual representation of how these waves propagate and interact with obstacles.



Victor Zappi (above), Arvind Vasudevan (lower left),  
Sidney Fels (lower right)

Throughout the piece, a virtual representation of a two dimensional physical space domain is projected in front of the audience, where the music played by the performer is visualized as coloured waves travelling on the surface of the screen. Through a digital music interface, the performer interactively manipulates the pixels that compose the propagation domain, drawing

reflecting walls, resonant chambers and more complex dynamic geometric structures. These elements realistically reflect and absorb the sound injected into the domain, producing complex spectral modifications that are used by the performer as primary means of composition. The interaction between the sound sources and the geometry of the domain is also visualized on the screen as clear changes of waves' trajectories and recursive motion patterns, generating a multimodal representation of the involved acoustic phenomena. Furthermore, during the performance these geometries are coupled with different self-oscillating excitation models, to create and play 2D virtual instruments inspired by real aerophones and human voice production.

*Performing in Flatland* is the premiere of a novel digital technology that uses GPU parallel computing to simulate pressure wave propagation in real-time, both sonically and visually. Pressure and velocity values are calculated in the 2D domain using an FDTD solver, implemented in a shading language. Each FDTD cell corresponds to a pixel of a dynamic texture that is updated on the GPU and rendered on screen. The simulation runs at audio rate; at each cycle, the pressure values of a chosen position on the texture are sampled and packed into a buffer, which is then sent to the audio interface to provide a continuous sound stream.

The system was originally developed in the context of research in acoustics and speech. For the performance it has been transformed into an audio/visual instrument and is used together with electronic music controllers as a means of artistic expression.

We would like to thank Dr. Andrew Allen and Dr. Nikunj Raghuvanshi for their help and support. Without their contribution this work would not be possible.

Victor, Arvind and Sid with friends at the banquet before their performance (below)



## Sponsors/Commanditaires

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# Exhibitors/Exposants



VIBRA-SONIC

