

Mathematics of the Ear and Sound Signal Processing

Monday January 31, 2005

- 8:00–12:00 *Session Chair: Jack Xin*
- 8:30–9:15 *Check-In/Light Breakfast (Hosted by IPAM)*
- 9:15–9:30 *Welcome and Opening Remarks: Mark Green, IPAM Director*
- 9:30–10:30 **Mario Ruggero** (Northwestern University)
Cochlear mechanics: what we think we know and what we may or may not know
- 10:30–11:00 *Break*
- 11:00–12:00 **Charles Steele** (Stanford University)
Simulation for the organ of Corti and excitation of inner hair cell cilia
- 12:00–2:00 *Lunch (on your own)*
- 2:00–12:00 *Session Chair: Li Deng*
- 2:00–3:00 **Christopher Shera** (Harvard University/School of Medicine)
Emergent Phenomena in Cochlear Mechanics
- 3:00–3:15 *Break*
- 3:15–4:15 **Laurel Carney** (Syracuse University)
Quantitative Studies of Information Coding in the Auditory Nerve
- 4:15–4:30 *Break*
- 4:30–5:30 **DeLiang Wang** (Ohio State University)
An Auditory Scene Analysis Approach to Speech Segregation
- 5:30–7:00 *Wine/Cheese Reception (Hosted by IPAM)*

Tuesday February 1, 2005

- 8:00–12:00 *Session Chair: Stanley Osher*
- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 **Abeer Alwan** (UCLA)
Toward quantitative models of human speech perception and the application to noise-robust automatic speech recognition (ASR) systems
- 10:00–10:10 *Break*

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- 10:10–11:10 **Elvir Causevic** (Yale University / Everest)
FAST WAVELET ESTIMATION OF WEAK ABR SIGNALS
- 11:10–11:30 *Break*
- 11:30–12:30 **Joseph Keller** (Stanford University)
A sound source location mechanism and its development
- 12:30–2:00 *Lunch (on your own)*
- 2:00–12:00 *Session Chair: Jack Xin*
- 2:00–3:00 **Jont Allen** (University of Illinois at Urbana-Champaign)
Cochlear modeling and its role in human speech recognition
- 3:00–3:10 *Break*
- 3:10–4:10 **Richard Chadwick** (National Institute of Health)
Cochlear wave propagation and micromechanics
- 4:10–4:30 *Break*
- 4:30–5:30 **Karl Grosh** (University of Michigan)
Mechanical-Electrical-Acoustical Modeling of the Cochlea

Wednesday February 2, 2005

- 8:00–12:00 *Session Chair: Yingyong Qi*
- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 **Li Deng** (Microsoft Research)
Computer Speech Recognition: Mimicking the Human System
- 10:00–10:30 *Break*
- 10:30–11:30 **Fred Juang** (Georgia Institute of Technology)
Cognitive modeling and processing for speech recognition - ears and beyond
- 11:30–1:30 *Lunch (on your own)*
- 1:30–12:00 *Session Chair: Jack Xin*
- 1:30–2:30 **Yingyong Qi** (Qualcomm)
An Invertible Discrete Auditory Transform
- 2:30–2:45 *Break*
- 2:45–3:45 **Sigfrid Soli** (House Ear Institute)
A model for prediction of functional hearing abilities in real-world noise environments
- 3:45–4:00 *Break*

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- 4:00–5:00 **Fan-Gang Zeng** (University of California at Irvine)
Speech recognition with amplitude and frequency modulations: Implication for cochlear implants.
- 5:00–12:00 *Conclusion*

