

Hanse-Wissenschaftskolleg  
Institute for Advanced Study

Workshop  
of the HWK Postdoc Program  
**Computations in the  
Auditory Periphery**  
*Physiological Foundations and  
Comparative Modelling*

Delmenhorst, 04-05 July 2022

**Organizer:**

Dr. Go Ashida (HWK Associate Junior Fellow/ University of Oldenburg)

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**Venue:**

Hanse-Wissenschaftskolleg  
Institute for Advanced Study

Lemkuhlenbusch 4  
27753 Delmenhorst  
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Program

## Monday, 04 July 2022

- 09:40 – 09:50      **Greeting and Introduction: Day 1**
- 09:50 – 10:50      **"Basic auditory-nerve response properties and review of a modeling strategy & bonus: What's next? AN model with descending efferent feedback".** *Laurel Carney, University of Rochester (Rochester NY, USA)*
- 10:50 – 11:10      *COFFEE BREAK*
- 11:10 – 12:10      **"Modeling spontaneous activity, phase-locking, and rate-level functions of cat auditory-nerve fibers"**  
*Peter Heil, Leibniz Institute for Neurobiology (Magdeburg, DE)*
- 12:20 – 13:20      **"Temporal and spectral characteristics of the auditory periphery: rodents, carnivores, primates"**  
*Philip Joris, KU Leuven (Leuven, BE)*
- 13:20 – 14:40      *LUNCH BREAK*
- 14:40 – 16:50      **Joint Session: "Why consider the gerbil as a model to study sound encoding?"**  
*Antoine Huet, University of Göttingen (Göttingen, DE)*  
*Amarins Heeringa, University of Oldenburg (Oldenburg, DE)*
- 16:50 – 17:10      *COFFEE BREAK*
- 17:10 – 17:25      **"Temporal processing of Schroeder-phase harmonic tone complexes in the auditory nerve of the gerbil"**  
*Friederike Könitz-Steenken, University of Oldenburg (Oldenburg, DE)*
- 17:30 – 18:00      **"Inhibition in the cochlear nucleus enhances signal representation and regulates gain in complex acoustic environments"**  
*Christian Keine, University of Oldenburg (Oldenburg, DE)*
- 18:00 – 18:30      **General Discussion between Physiologists and Modelers**  
Please use the following link to suggest topics and raise questions!  
<https://cloudstorage.uni-oldenburg.de/s/e5CniyzyEioYjtz>
- 18:30 – 20:00      *DINNER*

## Tuesday, 05 July 2022

- 09:45 – 09:50      **Greeting: Day 2**
- 09:50 – 10:50      **"The history and future of the Carney-Bruce-Zilany cat and human AN models"**. *Ian Bruce, McMaster University (Hamilton, ON, Canada)*
- 10:50 – 11:10      *COFFEE BREAK*
- 11:10 – 12:10      **"The Meddis Model of the Auditory Periphery (MAP)"**  
*Tim Jürgens, Technische Hochschule Lübeck (Lübeck, DE)*
- 12:20 – 13:20      **"A mouse version of a computer model of the auditory nerve"**  
*Gerard Encina-Llamas, Technical University of Denmark (Lyngby,DK)*
- 13:20 – 14:40      *LUNCH BREAK*
- 14:40 – 15:40      **"A computational model of auditory nerve spiking activity with electric and acoustic stimulation"**  
*Waldo Nogueira, Hannover Medical School (Hannover, DE)*
- 15:50 – 16:05      **"Gerbil RLF modeling and aging with the Meddis MAP model"**  
*Fiona Teske, University of Oldenburg (Oldenburg, DE)*
- 16:05 – 16:20      **"A combined auditory periphery model: Connection of the Meddis (2006) inner hair cell stage with the Bruce et al. (2018) synapse model"**. *Daniela Schwarz, University of Oldenburg (Oldenburg, DE)*
- 16:20 – 16:50      **"AN-synchrony decline and its relevance for IPD sensitivity"**  
*Jonas Klug, University of Oldenburg (Oldenburg, DE)*  
*Mathias Dietz, University of Oldenburg (Oldenburg, DE)*
- 16:50 – 17:10      *COFFEE BREAK*
- 17:10 – 18:30      **Final Discussion Round: "How to facilitate collaboration between physiologists and modelers?"**  
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- 18:30 – 20:00      *DINNER*