

## TU(R)NING SPACE – Analysis, synthesis and perception of kinetic auditory space in music, art and hearing science

International Symposium, Technical University of Munich, 4-5 July 2025

### Friday 4 July 2025

14:00 h Welcome & Introduction (Bernhard U. Seeber & Tim Otto Roth)

#### 14:15 h Session 1 **Locating Auditory Objects in Space**

Where and how do we localize sounds? Beyond the processing of binaural cues, the session focusses on contributions from learnt knowledge about sources, on context from room acoustics and the dynamic evolution of spatial relations of sound objects. Also, perceptual 'metaphysical' varieties are taken into consideration.

##### *Varieties of Spatial Hearing*

Dr Nicola Di Stefano

Institute for Cognitive Sciences and Technologies (ISTC), Rome, Italy

##### *Attention for hearing in space*

Prof. Annie Moulin

Equipe Perception Attention Mémoire, Centre de recherche en Neurosciences de Lyon, France

moderation: Prof. Bernhard U. Seeber

#### 15:30 h Session 2 **Acoustic mobilization – the challenge of kinetic sound objects**

How can we handle the dynamics of sound events? Pierre Schaeffer, who established the *Musique concrète* with his tape-recording pieces, coined the term 'objet sonore'. What are sound objects in art or the natural world and what are the challenges when they start to move?

##### *Sound in space: pushing the limits of auditory motion perception*

Prof. Catherine Guastavino

McGill University & CIRMMT (Centre for Interdisciplinary Research in Music Media & Technology), Montreal, Canada

##### *Sound objects in natural space – from psychoacoustics to natural space perception*

Prof. Christian Lorenzi

Experimental Psychology, Ecole normale supérieure, Paris, France

moderation: Dr. Antoine Bourachot (Audio Information Processing, Technical University of Munich)

#### 16:45 h **Coffee Break**

#### 17:15 h Session 3 **Acoustic turn: The impact of Fourier, Ohm & Helmholtz**

What are the foundations of a modern hearing culture? The findings of Fourier, Ohm & Helmholtz underly not only the modern understanding of acoustics, but also triggered a paradigm shift in natural and cultural science. The session discusses this turn to a "thinking with sound" and modern ways for sound analysis.

##### *Analyzing the musical scene*

Prof. Meinard Müller

International Audio Laboratories Erlangen, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

##### *When Sound Meets Self: Defining Acoustic Space in the late 19th Century*

Prof. Viktoria Tkaczyk

Media and Knowledge Technologies, Humboldt University, Berlin, Germany

moderation:

20:00 h Evening Panel – public & in German, live captioning in English

**Curtain up for the loudspeaker: Sound art in the tension field between installation, art and music theater**

Prof. Helga de la Motte-Haber

Semantic Musicology, Technical University Berlin, Berlin, Germany

Prof. Florian Hecker

sound art, Akademie der Bildenden Künste München, Munich, Germany

Sabine Schäfer

composer, sound art/media art, Karlsruhe, Germany

moderation: Dr. Tim Otto Roth

**Saturday 05 July 2025 morning**

9:00 h meet and greet

9:15 h Session 4 **In and out of Neuronal Tune: Spatial Intonation**

How does the brain shape our sound experience? The neuronal system pieces together auditory objects from tonotopically separated information. Pitch and temporal information is crucial for forming objects while the spatial evolution of the scene and the source's timbre help us follow sources over time.

*Pitch and timbre: Insights from behavioral and neuroimaging studies*

Prof. Andrew Oxenham

Psychology, University of Minnesota, USA

*Perception of pitch, interval and contour: Insights from music and processing deficits*

Prof. Barbara Tillmann

Université Bourgogne Europe, CNRS, LEAD UMR5022, 21000, Dijon, France

moderation:

10:30 h **Coffee Break**

11:00 h Session 5 **Birth of Electroacoustic Music: From Interruption to Mobilization**

What are the foundations of sound synthesis and its artistic consequences? Already in 1837 Charles Grafton Page sketched an early form of an electroacoustic loudspeaker, which revolutionized with some latency music and the work with acoustic space in the 20<sup>th</sup> century.

*From cybernetics to complexity in ecosystemic musical practice*

Dr. Dario Sanfilippo

Vienna, Austria

*Thinking Pure Tone Waves – feedback synthesis in which gravity and acoustics are brought into generative equation*

Virgile Abela

Marseille, France; associated artist to MAS Platform LMA-ECM-CNRS-AMU & Laboratoire Modulaire, ESAM

moderation:

12:15 h **Closing discussion**

from 12:30 h Demonstration of the interactive audiovisual research space “real-time Simulated Open Field Environment” of the Audio Information Processing group in the anechoic chamber, building N9.

### **Funding**

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Professorship for Audio Information Processing (AIP), Prof. Seeber, TUM  
TUM Universitätsstiftung

### **Organization**

Professorship for Audio Information Processing (AIP), Prof. Seeber, TUM  
Dr Tim Otto Roth, imachination projects  
TUM Center for Culture and Arts

TUM will take photographs and/or film during the event for publication in our publications, on our website [www.tum.de](http://www.tum.de) and on our social media channels, and for editorial reporting by third parties. If you do not want to be photographed or filmed, please inform our photographers or filmmakers and Bernhard Seeber. The purpose of the processing is to document the event through photography/film.

## Location & Getting there

Room 2300 “Friedrich von Thiersch”, Gabelsbergerstrasse, 80333 Munich, Germany



(modified from openstreetmap.org)

Use “fancy” entrance “T3” below the TUM Clock Tower, go to 2<sup>nd</sup> (parquet) or 3<sup>rd</sup> (balcony) floor and enter room 2300 on right hand side of staircase.



## A few nearby (art) things to do while in Munich

- Pinakothek der Moderne, <https://www.pinakothek-der-moderne.de/>
- Alte Pinakothek, <https://www.pinakothek.de/de/alte-pinakothek>
- Lenbachhaus, <https://www.lenbachhaus.de>
- Visit art galleries in the “Kunstareal” – <https://kunstareal.de> and app “Kunstareal Walks”
- Exhibition “Lee Miller Photography”, Amerikahaus, <https://www.amerikahaus.de>, until 31.07.2025
- Exhibition “Picasso, Beckmann, Turner und andere Geschichten, die das Meer erzählt”, Olaf Gulbransson Museum Tegernsee, <https://www.olaf-gulbransson-museum.de>, until 20.07.2025
- Bergson new concert hall with in-residence “Jazzrausch Bigband”, <https://bergson.com>
- Jazzclub Unterfahrt, <https://www.unterfahrt.de>
- Gasteig HP8 “interim” concert hall, <https://www.gasteig.de>
- For concert and art listings see <https://www.muenchen.de/en/events> and <https://www.in-muenchen.de/>