

Lecture

Music Processing Analysis (MPA)

Introduction

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International Audio Laboratories Erlangen
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Meinard Müller



- Mathematics (Diplom/Master)
Computer Science (PhD)
Information Retrieval (Habilitation)

Bonn University



- Combinatorics (Postdoc)

Keio University, Japan



- Senior Researcher

Max-Planck Institute, Saarland



- Professor: Semantic Audio Processing

Erlangen-Nürnberg University



Group Members

- Christof Weiß
- Frank Zalkow
- Patricio López-Serrano
- Sebastian Rosenzweig
- Hendrik Schreiber



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Where are we?

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Fraunhofer-Gesellschaft

- Europe's largest organization for applied research
- 18,000 employees worldwide, total budget: 1.5 billion €
- 60 institutes covering a broad range of research areas

Fraunhofer Institute for Integrated Circuits IIS

- Largest Fraunhofer institute
- Staff >700 people
- MP3



Where are we?



Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)

- One of Germany's largest universities
- More than 35,000 students



Collaboration between FAU and Fraunhofer IIS

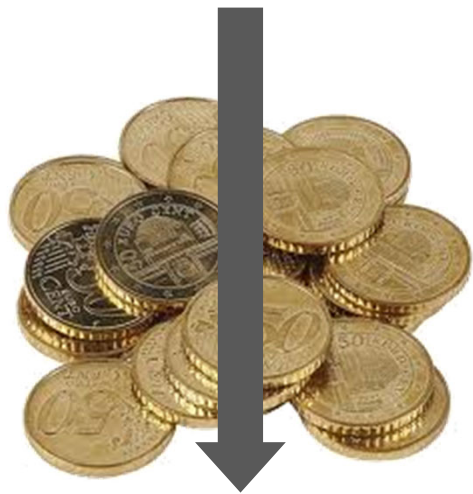
- Roots of “MP3” audio compression scheme
- Research on audio coding in Erlangen since 1981

International Audio Laboratories Erlangen

 **Fraunhofer**
IIS




FAU FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG



AUDIO
LABS

International Audio Laboratories Erlangen



Audio

International Audio Laboratories Erlangen

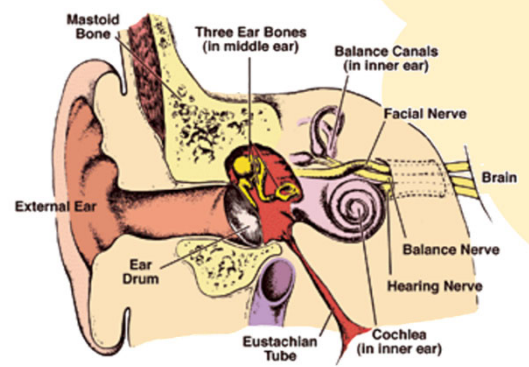
Audio Coding



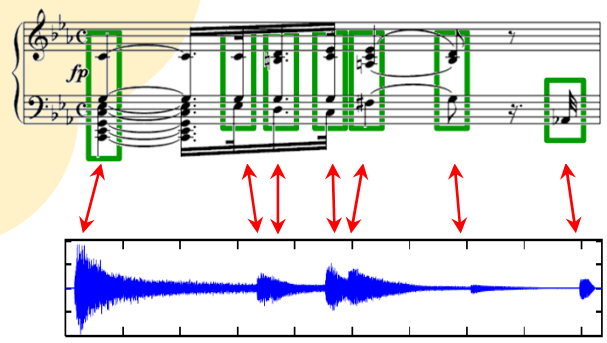
3D Audio



Audio



Psychoacoustics



Music Processing

AudioLabs – FAU

- Prof. Dr. Jürgen Herre
Audio Coding
- Prof. Dr. Bernd Edler
Audio Signal Analysis
- Prof. Dr. Meinard Müller
Semantic Audio Processing
- Prof. Dr. Emanuël Habetts
Spatial Audio Signal Processing
- Prof. Dr. Frank Wefers
Virtual Reality
- Dr. Stefan Turowski
Coordinator AudioLabs-FAU



Related Courses

Audio Processing **Laboratory**

The objective of this lab course is to give students a hands on experience in audio processing.

- Offered every semester
- Short-Time Fourier Transform
- Speech Enhancement
- Statistical Methods
- Speech Analysis
- ...

Registration via StudOn is mandatory!

Audio Processing **Seminar**

Various applications within audio and acoustic signal processing.

- Offered every semester
- Advanced topics
- Require lecture on DSP, audio, ...
- Also music-related topics
- ...

Registration via StudOn is mandatory!



Registration on studOn is mandatory!

Related Courses

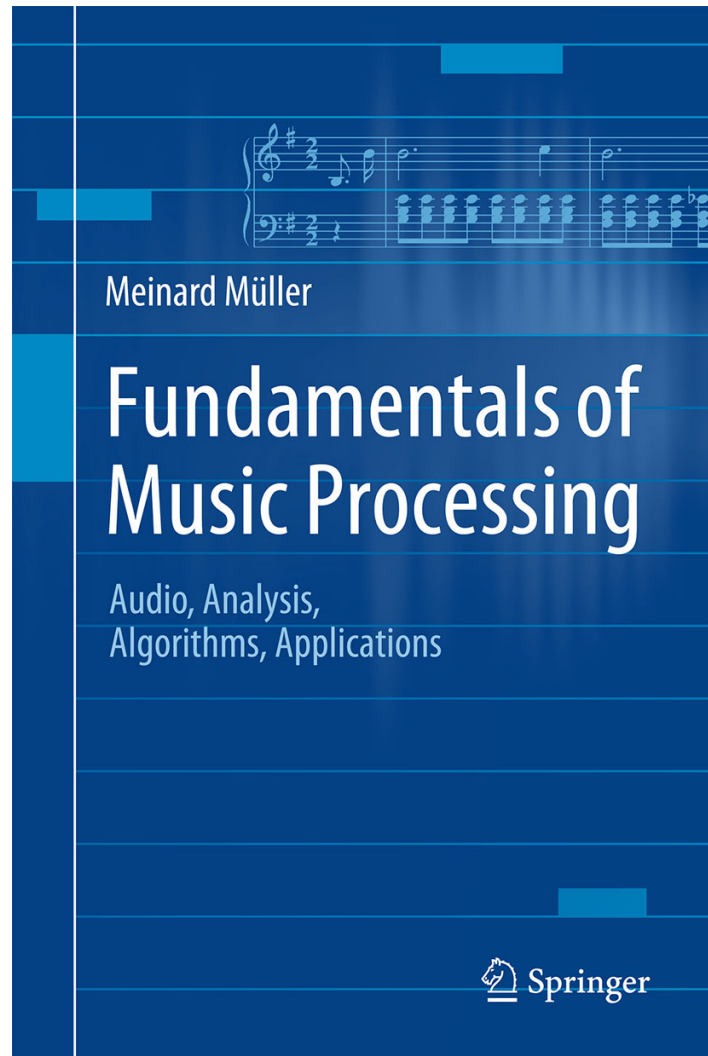
- **Speech Enhancement**
Prof. Dr. Emanuël Habets
AudioLabs
- **Advanced Topics in Perceptual Audio Coding**
Prof. Dr. Jürgen Herre
AudioLabs
- **Music Processing – Synthesis**
Prof. Dr.-Ing. Rudolf Rabenstein
LMS

Lecture: Music Processing Analysis (MPA)

https://www.audiolabs-erlangen.de/fau/professor/mueller/teaching/2018w_mpa

- Dates, Material, Information ... → **See website!**
- Time: Mo 16-18
- Mandatory elective course for CME, I&K, EEI, and ASC
Credits: 2,5 ECTS
- Vertiefungsmodul Informatik (Master of Science)
Medieninformatik, Mustererkennung
Credits: 5 ECTS (Lecture & Exercise, MPA-LE)
Time (Exercise): Mo 14-16
- Oral exam

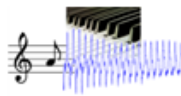

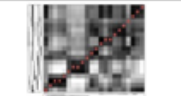
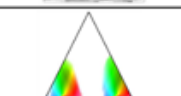

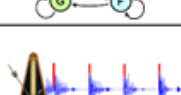


Book: Fundamentals of Music Processing



Meinard Müller
Fundamentals of Music Processing
Audio, Analysis, Algorithms, Applications
483 p., 249 illus., hardcover
ISBN: 978-3-319-21944-8
Springer, 2015

Accompanying website:
www.music-processing.de

Book: Fundamentals of Music Processing

Chapter		Music Processing Scenario
1		Music Representations
2		Fourier Analysis of Signals
3		Music Synchronization
4		Music Structure Analysis
5		Chord Recognition
6		Tempo and Beat Tracking
7		Content-Based Audio Retrieval
8		Musically Informed Audio Decomposition

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