

"Perceptual Audio Coders - What To Listen For" - The Web Edition

Sponsored by the AES TC on Coding of Audio Signals

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Once Upon A Time ...

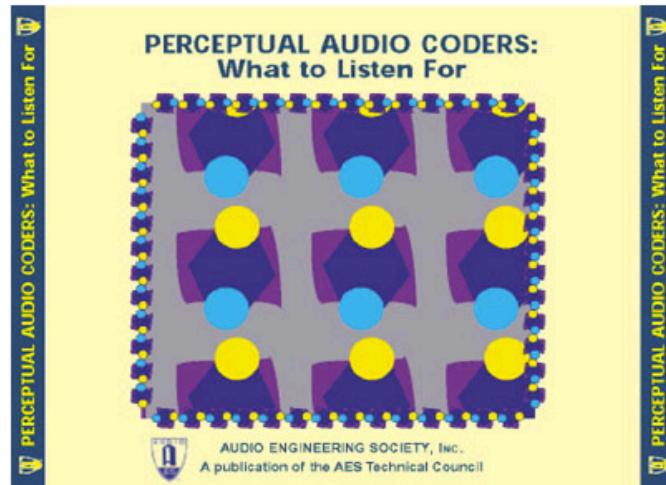
- ... there were many perceptual audio codecs deployed into ubiquitous applications but there was limited understanding of how that could impact audio quality 😞
 - What kind of distortions could arise from low bitrate audio coding?
 - Why do they arise and what is their technical background?
 - How could I recognize them?
 - Is there a possibility to train myself and become a critical or even expert listener? Maybe even at home?
- This sparked the idea of providing *dedicated educational material* to the public by the AES Technical Committee on Coding of Audio Signals (TC-CAS). A new project was born!

The Original CD ROM Project

- “Perceptual Audio Coders - What To Listen For” (2001/2002)
- Project leader: Markus Erne, Co-pilot: Jürgen Herre
- Many authors from TC-CAS
- Hybrid CD-ROM
 - Dedicated technical material on artifacts and their background in HTML format
 - Many sound examples for each artifact type in varying intensity
 - For high-quality playback:
Listenable also as regular Audio CD
- Several printings have been sold out



The Original CD ROM Project - AES Web Site



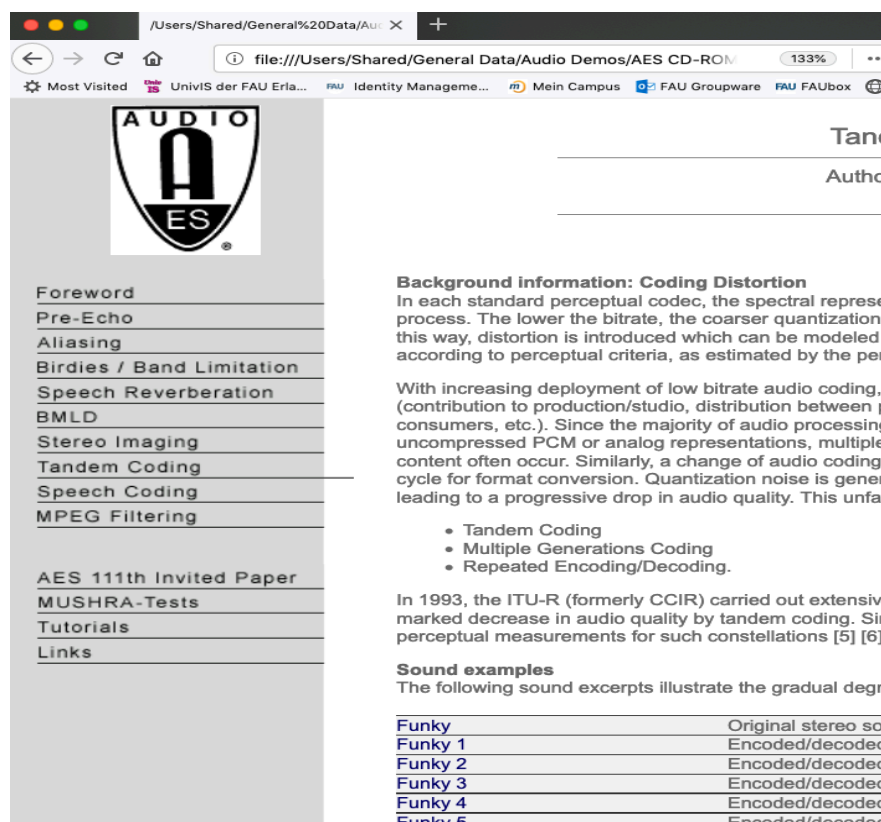
In January of 2002, The Audio Engineering Society's Technical Council launched a tutorial project on CD-ROM, "**Perceptual Audio Coders: What to Listen For.**"

Developed by the Technical Committee on Coding of Audio Signals, and produced by Dr. Markus Erne, the unique CD-ROM is the first of its kind to be produced by the AES. It has been developed to familiarize audio engineers, broadcast engineers, and students of audio with the underlying principles of perceptual audio coding.

PURCHASE

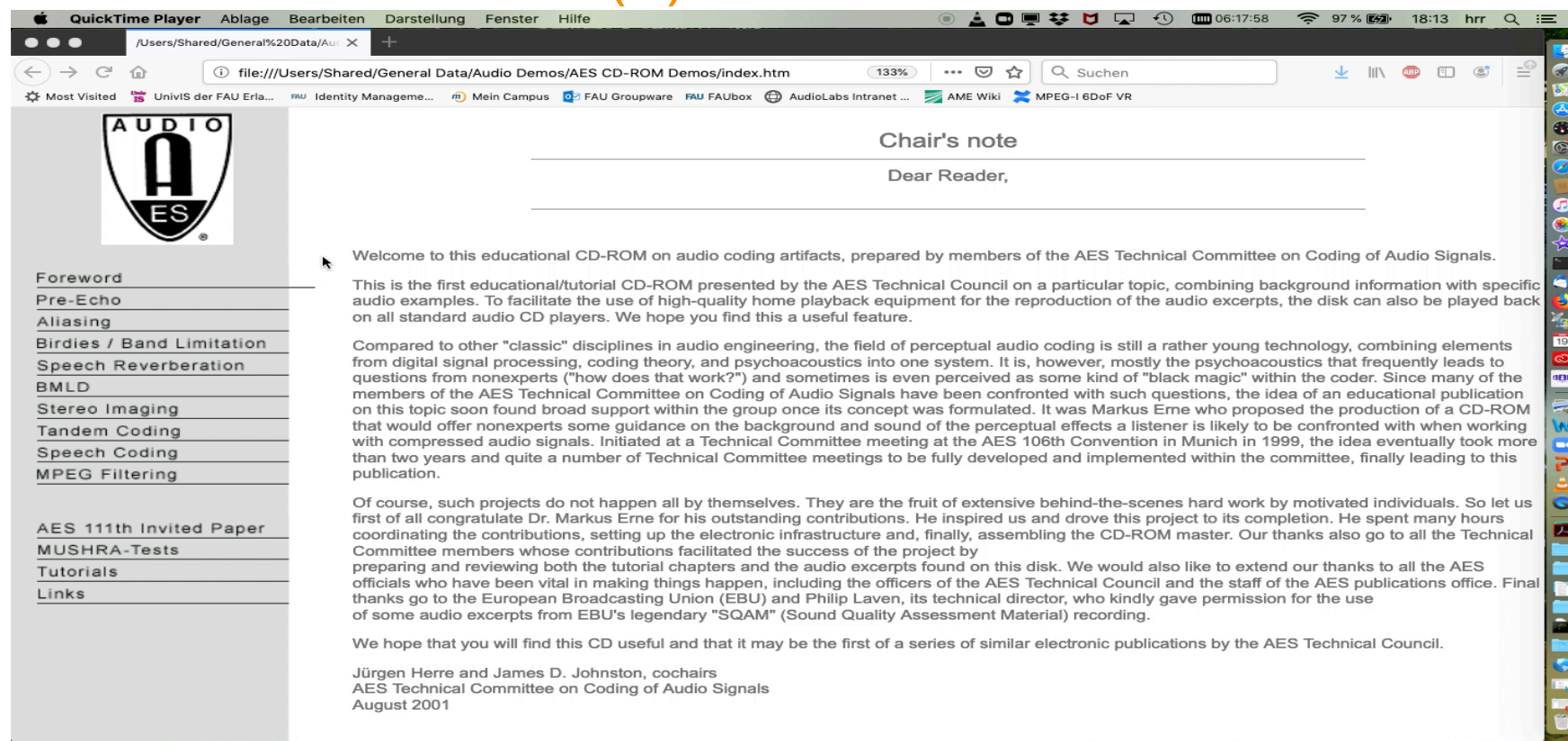
(\$20 / \$15)

CD-ROM – Content



Foreword
Pre-Echo
Aliasing
Birdies / Band Limitation
Speech Reverberation
BMLD
Stereo Imaging
Tandem Coding
Speech Coding
MPEG Filtering
AES 111th Invited Paper
MUSHRA-Tests
Tutorials
Links

CD-ROM – Content (2)



The Next Generation – “The Web Edition”

- Many years have passed since creation (2001/2002)
 - Technology and devices have progressed
 - Desire/opportunity for improvements
 - Presentation format: Could this nice content become e.g. usable on portable devices? With newer features for playback? CD playback still useful?
 - Content: Audio coding technology has evolved since 2002. New algorithms have become successful (esp. parametric coding techniques, very successful at very low bitrate) → New types of artifacts may be observed
- Ongoing project within TC-CAS since 2017 to produce an enhanced 2nd generation ‘CD-ROM’, i.e. the *Web Edition*
- This workshop presents the (preliminary) results of this effort!

Workshop Overview: “What To Listen For” – The Web Edition

1. The Original CD-ROM Project
(*Jürgen Herre*)
2. Format Enhancements / Better Presentation
(*Sascha Dick*)
3. Content Enhancements / New technical material
(*Christof Faller*)
4. What's next?
(*Jürgen Herre*)

Q&A / discussion ...

“Perceptual Audio Coders - What to Listen For“

The Web Edition: Format Enhancements

Sascha Dick

Overview

Goal:

Getting the overall user-experience up to date and compatibility with a wider range of devices

- New website design according to today's web design standards
- Re-implementation in HTML 5
- Improved readability and layout, automatic scaling of content
- Compatibility with mobile devices for viewing on tablets and smartphones
- Embedded audio player for improved usability
- Interactive spectrogram view for intuitive comparison

Wrap-Up & Next Steps

- Presented the enhanced 2nd generation 'CD-ROM', i.e. the *Web Edition* of the 'Perceptual Audio Coders – What To Listen For' project (TC-CAS)
- Numerous improvements in content ('artifacts of modern codecs') and presentation (HTML5 & mobile device support)
- Presented material is a snapshot in time – more fine tuning will happen
- Target: Publication in October 2020 by AES Web Shop
- Special Acknowledgements to:
 - *Sascha Dick* for countless hours of diligent editing work
 - *Fraunhofer IIS* for providing resources for professional HTML5 conversion

*Thank You Very Much
For Your Kind Attention!*