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AES Audio Engineering Society - Pacific Northwest Section

***Around the Puget Sound, Seattle, Washington, U.S.A.***

**NOTE: anyone can attend this meeting regardless of their status as an AES member.**
**AES MEMBERSHIP IS NOT REQUIRED.**

## October Meeting Notice

# Issues in Digital Production That Remain a Problem


### Presented By
### James D. (JJ) Johnston
### Chief Scientist, Immersion Networks
### and
### Bob Smith
### SoundSmith Labs


### Presented by
### AES Pacific Northwest Section
### and
### The Institute for Electrical and Electronic Engineers (aka IEEE)
### Digipen Institute of Technology, Redmond WA
### Wednesday, October 3rd, 2018, 7:30pm

Directions to Digipen

PowerPoint deck

There has been a lot of argument, dispute, complaining, and shouting about tracks being **too loud** or too close to digital maximum. In this talk, we will show:

- what happens to your signal, its spectrum, and its loudness (remember, loudness is a perceived quantity)
- how this affects the ability to be transmitted via bit-rate reduction systems
- how it affects standard "lossless" codecs
- using graphics and audio clips, what happens to your music when you clip it digitally, cause intersample overs, and/or hypercompress in the name of **LOUD**
- how this sort of clipping causes aliasing of other clipping byproducts and how intersample overs make a DAC fall apart in a different way
- how a pleasant sound can become something else altogether

- using a variety of statistics on particular clips taken directly from their intended digital delivery streams, exhibiting clipping, what one might call *enlightened clipping*, level compression, intersample overs, changes in loudness over a track, and how much spectral dynamic range there is in a variety of digital streams
- that encoding/decoding such streams, especially with lossy codecs can create **MORE** clipping and **MORE** intersample overs, forcing both more distortion and higher required data rates for the reduced-rate music.

We are not going to talk about artistic judgements that are supposed to be **LOUD,** but rather about what happens after mastering when a clip has been pushed beyond reason.

KEEP IT DOWN A BIT. If you want to clip, do leave some headroom. That way, rather than having a delivered result that depends entirely on the actual DAC the listener is using, you can guarantee your market a consistent experience.

# The Presenters

**JJ Johnston**
JJ received the BSEE and MSEE degrees from Carnegie-Mellon University, Pittsburgh, PA in 1975 and 1976 respectively.

- Worked 26 years for AT&T Bell Labs and its successor AT&T Labs Research.
- One of the first investigators in the field of perceptual audio coding.
- One of the inventors and standardizers of MPEG 1/2 audio Layer 3 and MPEG-2 AAC, as well as the AT&T Labs-Research PXFM (perceptual transform coding) and PAC (perceptual audio coding) and the ASPEC algorithm that provided the best audio quality in the MPEG-1 audio tests.
- Currently working in the area of auditory perception of soundfields, electronic soundfield correction, ways to capture soundfield cues and represent them, and ways to expand the limited sense of realism available in standard audio playback for both captured and synthetic performances.
- Mr. Johnston is an IEEE Fellow, an AES Fellow, a NJ Inventor of the Year, an AT&T Technical Medalist and Standards Awardee, and a co-recipient of the IEEE Donald Fink Paper Award.
- In 2006, he received the James L. Flanagan Signal Processing Award from the IEEE Signal Processing Society
- He presented the 2012 Heyser Lecture at the AES 133rd Convention: *Audio, Radio, Acoustics and Signal Processing: the Way Forward.*

**Bob Smith**

Bob has a BSEE from the University of Washington and has worked in the biomedical industry for over 40 years. When he's not playing acoustic/audio monkey for his corporate master, he runs an acoustic lab, SoundSmith Labs. From time to time, he can also be found recording local musical talents.

The last 20 years he has spent developing acoustic research and audio engineering disciplines for Stryker/Physio-Control to improve speech intelligibility for medical device voice prompting and voice recording systems in noisy environments.

Currently Bob is comparing several hardware and software acoustic / audio measurement systems to assess how much they vary and to the degree they converge on similar results.

# About AES

The Audio Engineering Society is the only professional society devoted exclusively to audio technology. Founded in the United States in 1948, the AES has grown to become an international organization that unites audio engineers, creative artists, scientists and students worldwide by promoting advances in audio and disseminating new knowledge and research.

Currently, over 12,000 members are affiliated with more than 75 AES professional Sections and more than 95 AES student Sections around the world. Through local Section events, members experience valuable opportunities for education, professional networking and personal growth.

# About IEEE

The Institute for Electrical and Electronic Engineers, or IEEE (eye-triple-e), is the world's largest technical professional society serving professionals in all areas of electrical, electronic, and computing technologies. Due to its size and breadth of technical interests, the society is comprised of "chapter societies" representing the major sub-fields of study in electrical and computer engineering. Signal processing encompasses a wide-range of mathematical and computing techniques for the analysis, synthesis, and transformation of data. Hot topics in the group today include: music information retrieval, speech recognition and synthesis, acoustic event detection, and audio spatialization to name a few.

## Bob Moses

*AES PNW 2018-2019 Section Chair*

**n.b.** *The material presented at our meetings is the opinion of the presenter and not necessarily that of the Society. You are encouraged to conduct your own research and to form your own opinions before adopting the presented material as Truth.*

**Our meetings are open to anyone interested in Audio. AES membership is NOT required for you to attend our meetings.**

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