CJS Labs

Technology · Research · Strategy · Solutions

Lab Notes

Electroacoustics & Audio

- *Consulting*
- *Design / Testing*
- *Training*

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Inside this issue:

AES Headphone Technology Conference San Francisco, CA — 27-29 August 2018

I am co-chairing the AES Headphone Technology Conference which will be held 27-29 August 2019 here in San Francisco at Golden Gate Club in the historic Presidio .

The Paper and Workshop submission sites are now open. More information is available at:

http://www.aes.org/conferences/2019/headphones/

Training Services

CJS Labs offers customized in-house training. Our design experience, proven processes, and measurement expertise will make your product development more efficient. Learn how to optimize both your designs and test routines. Having a thorough understanding of fundamentals, correct terminology, and proper techniques will also enable you to make more informed decisions and communicate more effectively with your customers and vendors as well as within your own organization. Understand why certain failure modes are problematic, even if they are not obvious or audible. Sample course outlines and details are available on our website:

http://www.cjs-labs.com/training_seminars.html

Contact us to schedule a training course for your organization.

News and Upcoming Events

Fundamentals of Electroacoustics—Santa Clara, CA

In conjunction with Listen, Inc., I will be presenting the 1-day ***Fundamentals of Electroacoustic Measurements*** training course on

Monday 4 February 2019

in Santa Clara, CA. Spaces are still available.
Info and registration details are available at:

https://www.listeninc.com/west-coast-training-extravaganza-feb-4-8-2019/

History of ASA Standards

A paper I co-authored about the ASA Standards program was just published in JASA. The history of the ASA Standards program going back to the formation of the Society in 1929 is detailed, including the contributions of my venerable Standards Director predecessors. It is freely available on-line, including PDF download:

https://asa.scitation.org/doi/10.1121/1.5080329

Please contact us and let us know how we can be of service to you and your organization.

Christopher J. Struck

CEO & Chief Scientist

CJS Labs

57 States Street • San Francisco, CA 94114-1401 • USA
Tel: (415) 923-9535 • Email: cjs@cjs-labs.com • URL: http://www.cjs-labs.com/

CJS Labs

"Sound Advice Spanning 3 Decades"

57 States Street
San Francisco, CA 94114-1401
USA

Tel: +1 415 923-9535
E-mail: cjs@cjs-labs.com

NCAC National Council of Acoustical Consultants Member

IEEE CNSV

CJS Labs is a consulting firm based in San Francisco, CA. We specialize in audio and electroacoustics applications. With over 30 years of industry experience in engineering and technology management, our areas of expertise include transducers, acoustics, system design, instrumentation, measurement and analysis techniques, hearing science, speech intelligibility, telephonometry, and perceptual coding. We also offer project management, technology strategy, patent & IP evaluation, and training services

Back issues of Lab Notes are available on our website at:
http://www.cjs-labs.com/lab_notes_links.html

Probability Density Functions of Common Audio Test Signals

In addition to RMS level, peak, and crest factor, a signal may also be described by its statistics. The Probability Density Function (PDF) specifies the relative likelihood of the instantaneous time signal being within a particular range of values. PDFs for several common signals are shown.

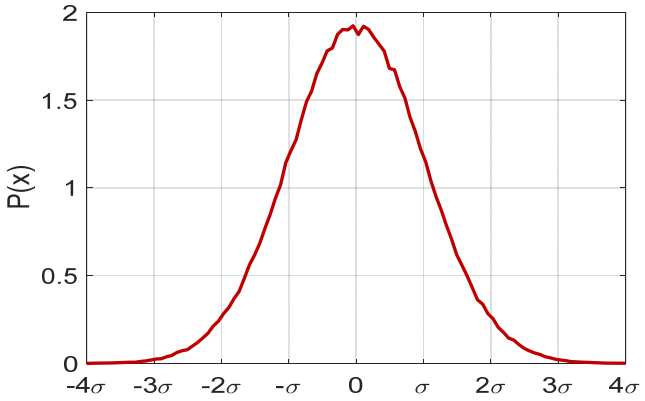

Fig. 1 Pink noise.

This is a random signal and exhibits the familiar Gaussian distribution. Pseudo random noise has the same distribution, as it is composed of short repeated segments of random noise.

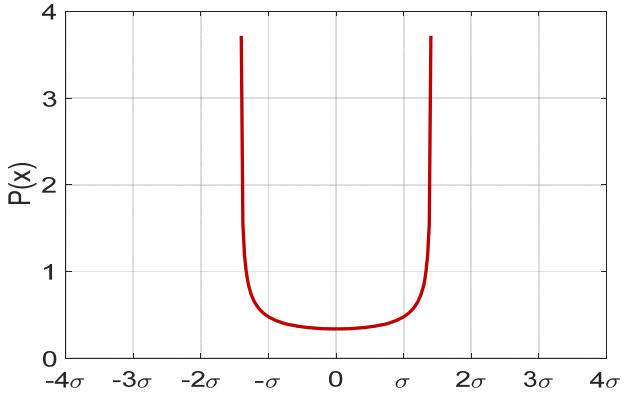

Fig. 2 Sine wave.

In contrast, the sine wave probability is highest at the positive and negative peaks (sometimes called 'bimodal').

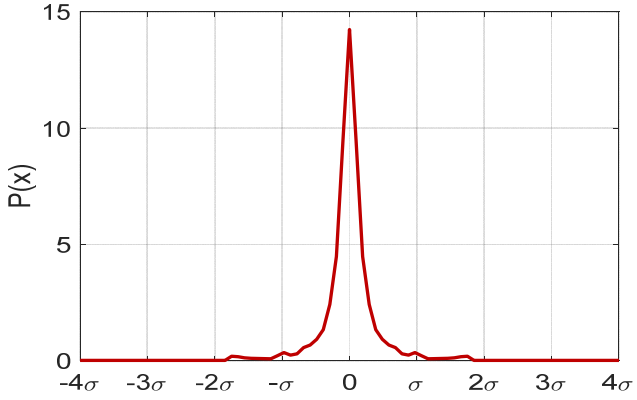

Fig. 3 32-frequency multi-tone signal.

For this signal, the distribution is narrow about zero.

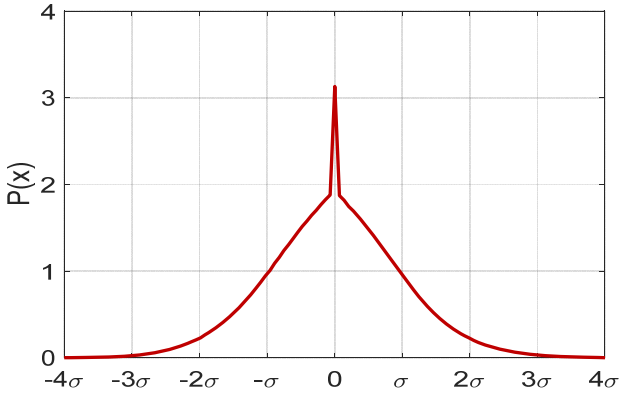

Fig. 4 Music signal (One After 909—The Beatles).

The height of the flanks of the music PDF can vary depending upon the specific signal, but the overall shape always appears similar.

Please contact us for more information.