AES Audio Engineering Society - Pacific Northwest Section

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

January Meeting Notice

Concepts and Practices for Evaluation of Rooms and Sound Systems Using FFT Analysis

Sponsored by

Pacific NW Section Audio Engineering Society

The Center for Digital Arts and Experimental Media at The University of Washington

When: Saturday, January 25, 2003, 11AM
Where: University of Washington (exact place known only to registrants)
Cost: Free, members and non-members
Note: Pre-registration required

Since the time of the ancient Greeks, people have tried various schemes to make a room "sound better", with the goal of increasing vocal and music intelligibility. In the early part of the last century, Dr. Wallace Sabine began to quantify the "sound" of a room mathematically, and Dr. Richard Heyser's identification of the concept of Time Delay Spectrometry gave practitioners a useful methodology for seeing the acoustics of a given space. TDS gave us a new and better way to explore acoustics with instruments. The original TDS setup was implemented in the analog domain and did not even require a computer.

Later techniques employ the Fast Fourier Transform (FFT) as the core of their analytical processing and are able to deliver more and more measurement data. With the advent of increasingly powerful personal computers, FFT analysis has become more readily available and useful.

A number of products have been introduced using FFT analysis to aid in room and sound system design; although each has its own variants on methodology, they are all still looking at the same acoustic problems, and use many of the same concepts and nomenclature.

Successful use of any testing method requires that the tester

1. have the right analysis system for the job, and that the data delivered by the system will be helpful in answering the question being asked;
2. know what the analysis system is actually measuring; and
3. know how to use the analysis system.

With this in mind, The Pacific Northwest Section of the Audio Engineering Society (www.aes.org/sections/pnw) and The Center for Digital Arts and Experimental Media at The University of Washington (www.washington.edu/dxarts) will present an all-day workshop titled "Concepts and Practices for Evaluation of Rooms and Sound Systems Using FFT Analysis".

The workshop will be held Saturday, January 25, 2003, at 11am, on the University of Washington main campus in Seattle. Admission will be free to AES Members and non-members alike, but pre-registration will be required for everyone (details below). Parking ($3 all day) is available on-campus, relatively close by.

The workshop will be led by local and national experts in the field and by interested students of the art. A TEF20 analyzer (graciously provided by Bruce Main) will be on hand to help us understand the principles involved.

As mentioned above, there are a number of hardware and software analysis tools available, and the presenters hope that this is the first of a series of such workshops. Future workshops would feature other analysis tools, and examine how each gathers, processes, and presents its data.

For this workshop, the TEF20 will allow us to see what our ears are hearing, and we will learn how it does what it does. The presenters will do their best to let us hear manifestations of the concepts discussed, and there will be opportunities for the listeners to ask questions and suggest test conditions.

> **NOTE:** This is a very deep subject, and attendees should be ready to gain an understanding of just how deep it is, rather than have an expectation that this workshop will provide any level of mastery of the topic (or of the TEF 20!).

To aid in advance background research, we have prepared some information which is available at http://www.aes.org/sections/pnw/reference
It includes a useful glossary of terms associated with acoustic measurement, and some details of the TEF process. (Thanks to Goldline and Bruce Main!)

Presenters

Blair McNair	Blair is the director of engineering for Spectrum Design Group, Oklahoma City, OK, a design build systems contractor. Blair's experience as a sound mix engineer and his infectious enthusiasm is directed to crafting sound systems that are fun to mix on. He was the Product Development Manager for the TEF business unit of Crown International for several years. Blair taught many TEF training courses for Crown and is currently a Sr. Training Instructor for Gold Line. He is currently the chairman of the Gold Line TEF advisory committee. His experience ranges from underwater sound reinforcement to US Navy shipboard communications to 78,000 seat sports venues to 20,000 seat religious facilities to the Wewahitchka Catfish Festival and almost anything in the middle.
Bruce Main	Bruce is a principal at Vector Inc, a manufacturer's representative firm and a long-term AES member. Bruce has extensive experience as a sound system designer, mixer, and is a member of the TEF advisory committee. He has designed sound systems for major sports venues, houses of worship, and other facilities. He owns a TEF20 analyzer and is available as a consultant to analyze your electroacoustic problems.
Mark Rogers	Mark is Director of the AV Department at the Greenbusch Group, a Seattle engineering consulting firm. He is a designer of audio/visual systems, including sound reinforcement, audio reproduction, video projection and displays, videoconferencing and audioconferencing, and related control systems. Typical projects include corporate boardrooms, convention centers, universities and hospitals. He has designed and installed AV for 30 years, and also teaches classes and seminars on AV technology. He is a registered Professional Engineer (Idaho)

	and earned his BSEE at the University of Idaho.
Daniel Casado	Daniel is the N. W. manufacturer's representative for a number of leading audio manufacturers. With over 20 years in the professional audio industry, his experience includes front of house mixing for national acts, mixing live performances for radio & television broadcast, sound system design & installation, manufacturing, R & D, and teaching electronics and audio theory. He also has extensive studio experience as a musician, producer, and engineer.

Schedule for the day:

11am sharp:	Start
1pm	Lunch (*BYO Brown Bag*). Liquid refreshments will be provided.
1:30pm	Afternoon Session
3:30pm	15 min break. Liquid refreshments provided.
5:30pm	End of official program
5:30pm	Optional no-host in-room dinner. Hot food brought in.
6:30pm	Optional advanced research
9:30pm	End

Preregistration

Please send an email to:
mailto:rickchinn@hotmail.com

Indicate which of the following events (a/b/c) you will be attending:

a. The All-Day Presentation as described above. (11am to 5:30pm)
b. The Optional No-Host In-Room Dinner (5:30-6:30pm). (bring cash or check to pay; food will be ordered from several fine U-District delivery restaurants. Menus will be on-hand.) We feel that part of the benefit of attending such an event is the opportunity to interact with other audio

professionals in a relaxed and informal setting, and that is why we are doing dinner this way.

c. The Optional Advanced Research Evening Session (6:30-9:30pm), at which we will explore as many subtleties as we have time for.

Upon receipt of your preregistration, you will be given the URL for the secret website which will tell you the workshop's exact location, along with any last minute organizational material.