Announcement of Senior Course of Acoustic Talent Plan of Shenzhen Research Institute of Nanjing University

Since 2013, the Acoustic Talent Plan (ATP)remains committed to making the students understand the theory, learn to apply their knowledge in practice ,and find the way of innovation. The enrollment of the 17th ATP senior course is now starting in Shenzhen.

Digital signal processing, amplification and the electro-acoustical conversion converge to an active and intelligent loudspeaker system, providing more sound output at higher quality by using less size, weight, energy and manufacturing cost. This master-class addresses DSP programmer, system integrators and transducer developer as well and explains how DSP software can cancel undesired signal distortion, actively protect the transducer against mechanical and electrical overload and stabilize the voice coil at the optimum rest position to ensure maximum excursion over product life. The new opportunities open new degrees of freedom for the passive transducer and system development. The master-class presents a new design concept that optimizes efficiency and voltage sensitivity while using a minimum of hardware resources. The design steps are illustrated through practical examples using new simulation, measurement and diagnostic tools that analyze the performance of the audio device with nonlinear control.

The Senior Course will answer your following questions:

- Why is the electro-acoustical transducer the weakest part in the audio chain?
- Can we generate more sound with better quality from smaller speakers?
- Which new opportunities provides the digital signal processing for loudspeakers, and headphones?
- Which transducer problems can and which cannot be fixed by DSP?
- How to cancel the nonlinear distortion at high amplitudes?
- How to protect the transducer actively against mechanical and thermal overload?

- Why is a stabilized voice coil position important for maximum SPL?
- How to generate the desired loudspeaker properties over product life?
- Why do we need adaptive control system with self-learning capabilities?
- How to use the transducer itself as a mechanical sensor?
- How to improve the reliability of the loudspeaker in the practical application?
- Why is DSP required for using more efficient transducer which produce sound with less energy?
- Why are transducer nonlinearities beneficial for modern audio devices?
- What is Green Speaker Design and how to make it?
- How to speed up the loudspeaker development and the tuning of a sound system?

Recruiting Information

Target students:

Engineers have College degree or above or have been working for more than 5 years in the field of acoustics. Engineers of the audio industry active in research & development, manufacturing and quality control, students in the graduate program of the Electro-Acoustics.

Teaching Modes

Although Prof. Klippel speaks in English, the most important and critical parts will be translated into Chinese. All PowerPoint slides are bilingual and will be provided to the attendees. Sufficient time will be reserved for discussion which will be translated into both languages.

Course Time and Address

Time: November 8th, 2019, 9:00 a.m.-5:00 p.m. (8 classes, 1 day).

Address: Shenzhen.

Course Curriculum

“Software Complements Hardware in Active Loudspeakers” by Prof. Wolfgang Klippel.

During the course the following points are discussed:

- Transducer modeling at small and large amplitudes

- Digital signal processing dedicated for loudspeakers, headphone and other sound sources
- Adaptive nonlinear loudspeaker control using voltage and current monitoring
- Active cancelation of nonlinear signal distortion
- Active protection against thermal and mechanical overload
- Stabilization of voice coil rest position to maximize sound output
- Practical design of passive and active audio systems
- Defining the target performance while using audio signals (music, speech)
- Maximum efficiency – the key to modern audio devices (green speaker design)
- Sensitivity – Matching Amplifier and Speaker
- Demo of Adaptive Nonlinear Control (e.g. KLIPPEL controlled sound)
- Diagnostics with music – improved reliability and extended product life
- Linear speaker required for other applications (echo cancellation, ANC. …)

The participants are encouraged to send questions and to suggest additional topics which should be included in the workshop via E-Mail to eatp@vip.126.com

Fees

Course fees: RMB 1,000 /person; ATP 1-16 students, 5 and above persons: RMB800/person

Including the registration fees, training fees, and cost for technical references, course materials, etc. Formal invoices are available.

Training Certificate

After the course, the Senior Course Certificate of Acoustic Talent Plan of Nanjing University Shenzhen Research Institute will be issued to the students.

Registration

Time: 2019-09-12 – 2019-10-31

Please contact Ms. Mable Zhong via: eatp@vip.126.com , 13243820906 for Registration Form.

Contact Information

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