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

## **Distributed and Balanced Mode Transducers**

**Presented By**

**Marcelo Vercelli and Tim Whitwell MPhys**

**of**

**Tectonic Audio Labs**

**and**

**The Pacific Northwest Section of the AES**

**Tuesday, December 5th, 7:30pm**

**Tectonic Audio Labs, Woodinville Washington**

Our December meeting will be held at Tectonic Audio Labs (TAL), located in Woodinville for a tour and presentation on bending wave technology as used in audio transducer and system designs. The basics of the technology will be explained. In addition, two primary embodiments will be described, including DMLs (distributed mode loudspeakers) and BMRs (balanced mode radiators), with applications of these devices.

In addition to exploring DML and BMR transducers, we'll take a look at how these devices are measured. Both of our presenters are highly skilled in acoustic and electronic measurements. TAL has an anechoic chamber, with an arced microphone array, and a battery of software-based measurement tools.

Demonstrations will be conducted of the DML sound reinforcement system and several BMR based products (commercial and consumer).

Tectonic has both a branded audio business and an OEM business.

The Tectonic branded business is primarily in Pro Audio, with new products for the contractor market coming in the near future. Currently the branded products have applications in House of Worship, sports venues, government chambers, theaters, production work, etc.

OEM applications include DMLs and BMRs. Exciters for DMLs are currently in production with Lufthansa business jets (interior panels) and Wayne/Dresser fuel pumps (audio from the plastic front panels). BMR applications are currently in automotive (Bentley Bentayga and GT), consumer AV products (e.g. Q-Acoustics Media 4 soundbar), consumer safety devices (e.g. smoke alarms) and other products.

## Our Presenters

**Marcelo Vercelli** is the CTO of Tectonic Audio Labs and owner of Chameleon Labs LLC. Marcelo has been designing and manufacturing professional loudspeaker systems since 1988. He founded two companies focused in the professional audio market segment and has been awarded five U.S. patents in the area of transducer technology and loudspeaker acoustics. Over the last ten years, he has focused in the area of near-field and mid-field studio monitoring systems, having served as the Director of Engineering at Event Electronics. For the last five years he collaborated on development of bending wave technologies and associated audio system designs, including DMLs and BMRs, while serving as CTO for Tectonic Audio Labs. He has experience in the areas of product development, industrial and mechanical design, acoustic and electronic engineering as well as manufacturing engineering.

Marcelo's specialties include analog and digital audio system development, complex active loudspeaker system design, acoustic measurement and testing, transducer design, manufacturing engineering systems and strategies, and test systems for automated transducer and electronics production lines.

**Tim Whitwell, MPhys** Vice President Engineering at Tectonic Audio Labs. During a 20+ year career in the loudspeaker industry Tim has designed a wide range of award winning BMR and DML transducers and systems for Hi-Fi, home theatre, professional audio, TV and compact portable sector. He specializes in DML and BMR technologies and the simulation of transducers and electro-acoustic systems. Tim is the cited inventor on a number of patents in the fields of acoustics, transducer design and haptic feedback technology.

His specialties include acoustic design, simulation and measurements, loudspeaker system design and tuning, transducer design and optimization, magnetic finite-element analysis, DML (distributed mode loudspeaker) design, BMR (balanced mode radiator) design, laser vibrometry, and [COMSOL Multi-Physics](#) FEA analysis specialising in acoustic-structure interaction and electromagnetics.

## More information

[Company Website](#)

[System Overview](#)

[Technical library](#)

[Video library](#)

[FAQ](#)

## Dan Mortensen

*AES PNW 2017-2018 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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