

far end or from internal irregularities. Comparing the results of impulse response measurements in an empty tube and a tube filled with sound-absorbing material, we have checked the theoretical predictions on the lower cutoff frequencies of transverse modes of vibration and assessed the influence of asymmetrical and symmetrical modes in the two cases.

The experimental results show good agreement with the predicted behavior and practical suggestions of the AES document on plane-wave tubes [3] and confirm the predictions regarding the limits of usable bandwidth.

The possibility to make "anechoic" measurements of impulse responses with MLS-based systems seems to remove the need of filling the tube with sound-absorbing material. But the results presented here suggest that a good disposition of the sound-absorbing material can give results closer to the ideal situation of constant, resistive acoustic load and simple plane-wave propagation.

5 REFERENCES

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THE AUTHORS



R. Magalotti

Roberto Magalotti was born in Bologna, Italy, in 1968. He graduated summa cum laude in physics in 1994 from the University of Bologna where he presented a thesis on the physical modeling of musical instruments. In cooperation with the University of Padua, Italy, he lectured on the same subject in several scientific conventions, including ISMA '95 (International Symposium of Musical Acoustics, held in Dourdan, France) and CIARM '95 (International Convention on Acoustics and Musical Research, held in Ferrara, Italy).

From 1996 to 1998 Mr. Magalotti designed professional loudspeaker systems in the research and development laboratory of Generalmusic. In 1998 he attended the School of Acoustics of the University of Ferrara, where he specialized in noise pollution, acoustical treatment and room acoustics. In the same year he joined Music Media Soft, and since then he has been collaborating on the development of loudspeaker systems for the LEM line of products. His research interests involve optimization of crossover filters and the theory of loudspeaker horns.

Mr. Magalotti is a member of AES.

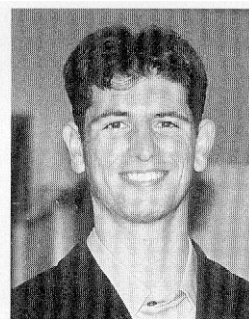


C. Zuccatti

CIARE S.p.a. in Senigallia, Italy, a loudspeaker manufacturing firm, where he worked first as the designer of high-power loudspeakers, horn drivers, and horns, then as research and development manager.

In 1996 Mr. Zuccatti joined Generalmusic, Italy, where he is responsible for the power amplifiers and loudspeaker enclosures project team. Since 1998 he has operated as an independent consultant in the field of loudspeaker design, car audio systems, and professional audio.

Mr. Zuccatti has written several technical articles for the Italian magazine *Audio Review*. He is a member of the Audio Engineering Society.



P. Pasini

Paolo Pasini was born in Rimini, Italy, in 1973. He studied physics at the University of Bologna from which he received a degree in 1997 for a work on anechoic chambers and plane wave tubes. This work took place at Generalmusic laboratories. He then attended the School of Acoustics at the University of Ferrara, dealing with ambient and room acoustics. He is currently working in the field of software quality at Technogym Industries.

Mr. Pasini is involved in music and plays the electric guitar in a small band.