

An audio mixer based on 3D acoustical simulation of architectural models

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ABSTRACT

The acoustic illusion of music being performed in any room, being virtual or real, is possible with today's advanced room acoustic software, Odeon. Recently, a music CD has been released with the simulated acoustics of the famous Hagia Sophia in Istanbul, although the recordings were originally made in an anechoic room. The quality and realism of the 3D sound is believed to be unparalleled. The acoustic simulation technique has also been applied for the simulation of a complete symphony orchestra using multi-source-auralisation and an integrated mixing of the sound from all the instruments.

The room acoustic software Odeon was originally developed at the Technical University of Denmark with the purpose of making acoustic simulations as a tool for the design of concert halls and other acoustic venues. The simulation technique is based on theoretical models and approximations of the physical behaviour of sound in rooms such as reflection, absorption, scattering, and diffraction. The directional characteristic of the sound sources is also taken into account.

The presentation will include music examples combined with the acoustics of a reconstructed Roman theatre, a Byzantine church, and a new concert hall.