

Real-time auralization: a low cost updating of ray-tracing results induced by modifications of the acoustical space.

Authors: A. Billon and J.J. Embrechts (University of Liege, laboratory of Acoustics)

Nowdays, the ray-tracing (RT) method is one of the most popular tools for room acoustics calculations. Despite the progresses realised in the conception of algorithms and the increase of computers power, their use remains rather time consuming. In the AURALIAS project, an interactive auralization system for acousticians and architects is developed, which allows the auralization of an acoustical space based on the results of the RT software SALREV. One of the aim of this project is to allow for real time modifications of the room (absorption and diffusion coefficients, position of some reflectors), which is of course a very important challenge for the RT software.

In this presentation, a criterion based on subjective and objective considerations is presented, in order to separate the RT results in two parts: if a modification in the acoustical space occurs, the first (early) part of the echograms should be exactly recalculated, while the second (late) part could be approximated. The limits of such an approach are also shown.