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Challenges in calibration of acoustical models for historic virtual reality auralizations

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ABSTRACT

The digital acoustic simulation has always been subject to discussion among experts in relation to the type of software employed and relative setup. The application becomes more challenging, especially in the context of unroofed performance spaces like ancient theatres. This paper deals with the calibration process within two geometrical acoustic-based software. The simulations have been performed in order to assess the calculation methodologies upon impulse responses (IRs). The evaluation has been carried out by placing the same number of sources and receivers into a digital model realized with Autocad software and representing the architectural features of the Greek-Roman theatre of Tyndaris. Thereafter, the outcomes gathered by the calibration process have been compared with the on-site measured values related to the main acoustic parameters as outlined by ISO 3382. The model calibration has been characterized by the determination of absorbing and scattering coefficients applied to different finish materials.

