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Abstract

This paper addresses an issue relevant in the first stage of design, namely, the mathematical relationship between the volume of a hall, the size of the audience and the reverberation time required to conform with the hall's acoustical needs. The partial formulae derived from the theory, which is based on the earlier findings of Beranek and Kosten, are very useful for the prediction of the mid frequency reverberation time when the volume and the audience size are known. In addition, these practical formulae may be used in the early design phase to find the optimum hall volume given the audience size and the reverberation time required to conform with the hall's acoustic needs. If the hall under study is not a concert hall but an opera hall, it is necessary to adjust the hall's volume for the absorptive capacity of the audience seated in boxes.