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Acoustics — Measurement of room acoustic parameters —

Part 1: Performance spaces

Acoustique — Mesurage des paramètres acoustiques des salles —

Partie 1: Salles de spectacles

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3382-1 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This first edition of ISO 3382-1, together with ISO 3382-2 and ISO 3382-3, cancels and replaces ISO 3382:1997, of which it constitutes a technical revision. Annex A has been extended with information on JND (just noticeable difference), recommended frequency averaging and by the addition of a new parameter for LEV (listener envelopment). A new Annex C has been added with parameters for the acoustic conditions on the orchestra platform.

ISO 3382 consists of the following parts, under the general title *Acoustics — Measurement of room acoustic parameters*:

— *Part 1: Performance spaces*

— *Part 2: Reverberation time in ordinary rooms*

Open plan spaces are to form the subject of a future part 3.

Introduction

The reverberation time of a room was once regarded as the predominant indicator of its acoustical properties. While reverberation time continues to be regarded as a significant parameter, there is reasonable agreement that other types of measurements, such as relative sound pressure levels, early/late energy ratios, lateral energy fractions, interaural cross-correlation functions and background noise levels, are needed for a more complete evaluation of the acoustical quality of rooms.

This part of ISO 3382 establishes a method for obtaining reverberation times from impulse responses and from interrupted noise. The annexes introduce the concepts and details of measurement procedures for some of the newer measures, but these do not constitute a part of the formal specifications of this part of ISO 3382. The intention is to make it possible to compare reverberation time measurements with higher certainty and to promote the use of and consensus in measurement of the newer measures.

Annex A presents measures based on squared impulse responses: a further measure of reverberation (early decay time) and measures of relative sound levels, early/late energy fractions and lateral energy fractions in auditoria. Within these categories, there is still work to be done in determining which measures are the most suitable to standardize upon; however, since they are all derivable from impulse responses, it is appropriate to introduce the impulse response as the basis for standard measurements. Annex B introduces binaural measurements and the head and torso simulators (dummy heads) required to make binaural measurements in auditoria. Annex C introduces the support measures that have been found useful for evaluating the acoustic conditions from the musicians' point of view.