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New Metrics for the Characterization of Stage Acoustics in Concert Halls for Symphony Orchestras

by Behzad Ranjbari

Summary

A number of metrics for assessing the acoustical conditions for performers on concert hall stages have been proposed, notably by Dr. Anders Gade but also others. However, the subjective relevance of existing stage acoustic metrics for musicians, appears mainly to be associated with the communication with the audience rather than with the communication between musicians. So far, no acoustic metrics have been identified to assess the balance between the hearing of others vs. the hearing of one's own instrument, which appears paramount to orchestral musicians. In this project, a number of laboratory simulations and psychoacoustical experiments as well as measurements on real stages have been studied and a pair of joint metrics, namely G_{Self} and G_{Other} are suggested to assess the balance between the hearing of self and that of hearing others.

Keywords**:** architectural acoustics, room acoustics, stage acoustics, concert halls, symphony orchestras, acoustical conditions for musicians, masking, early reflections, instrument directivity, stage measurement, musical acoustics, sound strength, ST_{Early}, ST_{Late}, G_{Self}, G_{Other}

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