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Room acoustics prediction based on multiple linear regressions and artificial neural networks

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Room acoustic quality is known to be dependent on several objective variables that are expected to be well correlated with subjective impressions of the room acoustics as judged by musical experts. Although subjects have different preferences and overall judgments are based in different criteria, it can be said that listeners in their subjective evaluation would give preference to reverberance, clarity, intimacy or spaciousness attributes. In this study, reverberance and clarity, expressed respectively by T30/EDT and C80 objective values, were predicted by multiple linear regression and artificial neural networks using normalized original data and principal components as dependent variables. The results obtained by these approaches were compared with predicted values using a computer simulation program based on the physics of ray-tracinG and with measured data. Room acoustical quality was also evaluated based on preferred values as suggested by some researchers.