

Acoustics of Opera Houses - University of Bologna

Materials and researches provided by the room acoustics group of the University of Bologna. Participants: Dr.Dario D'Orazio, Giulia Fratoni (PhD student), Anna Rovigatti (Postgraduate), Elena Rossi (Postgraduate). Former participants: Dr.Simona De Cesaris, Dr.Federica Morandi, Lisa Loreti.

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Recordings of Italian Opera orchestra and soloists



G. Donizetti: "Come Paride vezzoso" (from *Elisir d'amore*). Orchestra Corelli, Jacopo Rivani Conductor, Giacomo Contro (baritone)

[Donizetti.7z](#)

Soloists: Baritone (1 track), Tenor (1 track), 2 Sopranos (1 track); Choir (15 tracks) Parts: First Violins (8 tracks), Secondo Violins (6 tracks), Violas (6 tracks), Cellos (4 tracks), Double basses (3 tracks), Flute (2 tracks), Oboe (2 tracks), Clarinet (2 tracks), Bassoons(2 tracks), Horns (2 tracks), Trumpets (2 tracks), Trombones (2 tracks)

G. Verdi: "Di tale amor, che dirsi" (from *Trovatore*). Orchestra Corelli, Jacopo Rivani Conductor, Monica Boschetti (soprano)

[Verdi.7z](#)

Soloist: Soprano (2 track), Parts: Violins 1 (10 tracks), Violins 2 (8 tracks), Violas (6 tracks), Cellos (6 tracks), Double basses (4 tracks), Flute (1 track), Ottavino (1 track), Oboe (2 tracks), English horn (1 track), Clarinet (2 tracks), Bassoons(2 tracks), Horns (4 tracks), Trombones (4 tracks)

G. Puccini: "O mio babbino caro" (from *Gianni Schicchi*). Orchestra Corelli, Jacopo Rivani Conductor, Giorgia Paci (soprano)

[Puccini.7z](#)

Soloist: Soprano (2 track), Parts: Violins 1 (12 tracks), Violins 2 (10 tracks), Violas (8 tracks), Cellos (8 tracks), Double basses (7 tracks), Flute (2 tracks), Oboe (2 tracks), English horn (1 track), Clarinet (2 tracks), Bass Clarinets (1 track), Bassoons(2 tracks), Horns (4 tracks), Trumpets (3 tracks), Harp (1 track)

Each .wav file includes 12 tracks, corresponding to a dodecahedral microphone array. See the paper for azimuth and elevation of each tracks. Cellos were padded with an attenuation of 5 dB, trombones were padded with an attenuation of 15 dB.

Multitrack recordings of opera materials freely available for academic use. Please refer to the paper: [D. D'Orazio, S. De Cesaris, M. Garai, Proc. Mtgs. Acoust. 28, 015014 \(2016\)](#)

Acoustic measurements

Acoustic measurements were done in eleven Italian Historical Opera Houses, according to ISO 3382-1.

Please refer to the paper: [M. Garai, F. Morandi, D. D'Orazio, S. De Cesaris, L. Loreti, Acoustic measurements in eleven Italian opera houses: Correlations between room criteria and considerations on the local evolution of a typology, Building and Environment 94, 900-912](#)

Numerical models

Numerical model of Bayreuth Festspielhaus was calibrated with acoustic measurements. The CAD model and the virtual BRIRs are freely available for academic use at the [repository](#).

Please refer to the paper: [D. D'Orazio, S. De Cesaris, F. Morandi, M. Garai, The aesthetics of the Bayreuth Festspielhaus explained by means of acoustic measurements and simulations, Journal of Cultural Heritage, in press](#)

Loudspeaker Orchestra



Presentation at Boston ACOUSTICS 2017

[2017_06_boston.pptx](#)

CAD of TCBO, list of sources, BRIRs of Loudspeaker orchestra

[LSO.zip](#)

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