

MASSIMO GARAI

PUBLICATIONS

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### **International Peer-reviewed Journals**

A. Cocchi, **M. Garai** “Experimental verification of a short method for the determination of the acoustical insulation index of party walls” *Applied Acoustics*, **28**(2), 83-94 (1989). ISSN: 0003-682X, DOI: [http://dx.doi.org/10.1016/0003-682X\(89\)90011-X](http://dx.doi.org/10.1016/0003-682X(89)90011-X).

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A. Cocchi, **M. Garai**, C. Tavernelli “Boxes and sound quality in an Italian opera house”, *J. Sound & Vibration*, **232**(1), 171-191 (2000). DOI: <http://dx.doi.org/10.1006/jsvi.1999.2692>.

F. Anfosso-Lédée, **M. Garai**, J.-P. Clairbois, “*Adrienne*: une méthode européenne pour la qualification sur site des écrans antibruit”, *Bulletin des Laboratoires des Ponts et Chaussées*, **225**, 89-104 (2000) and *Acoustique et Techniques* (ISSN : 1263-8072), **23**, 6-19 (2000).

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**M. Garai**, F. Pompoli, “A European inter-laboratory test of airflow resistivity measurements”, *Acta Acustica united with Acustica*, **89**, 471-478 (2003).

**M. Garai**, F. Pompoli, “A simple empirical model of polyester fibre materials for acoustical applications”, *Applied Acoustics*, **66**, 1383-1398 (2005). ISSN: 0003-682X, DOI: <http://dx.doi.org/10.1016/j.apacoust.2005.04.008>.

**M. Garai**, P. Guidorzi, “In situ measurements of the intrinsic characteristics of the acoustic barriers installed along a new high speed railway line”, *Noise Control Eng. J.*, **56**(5), 342-355 (2008). DOI: <http://dx.doi.org/10.3397/1.2969244>, EID: 2-s2.0-56149117096, WOS:000260930800003.

D. D’Orazio, **M. Garai**, “Some considerations about the integration of r-ACF”, *J. Temporal Des. Arch. Environ.* (ISSN : 1346-7824), **9**(1), 112-115 (2009).

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**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**(2), 900-912, (2015). ISSN Print: 0360-1323, OCLC: 38871233, DOI: <http://dx.doi.org/10.1016/j.buildenv.2015.07.026>, EID: 2-s2.0-84939825622, WOS: 000367759400043.

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G. Semprini, C. Marinosci, A. Ferrante, G. Predari, G. Mochi, **M. Garai**, R. Gulli, “Energy management in public institutional and educational buildings: The case of the school of engineering and architecture in Bologna”, *Energy and Buildings*, **126**, 365-374 (2016). ISSN: 03787788, DOI: <http://dx.doi.org/10.1016/j.enbuild.2016.05.009>, EID: 2-s2.0-84971280704.

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C. Biserni, P. Valdiserri, D. D’Orazio, **M. Garai**, “Energy retrofitting strategies and economic assessments: the case study of a residential complex using utility bills”, *Energies*, **11**(8), 2055 (2018). ISSN 1996-1073, EID: 2-s2.0-85052824006, WOS:000446604100134, DOI: <https://doi.org/10.3390/en11082055>.

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P. Guidorzi, F. Pompoli, P. Bonfiglio, **M. Garai**, “A newly developed low-cost 3D acoustic positioning system: Description and application in a reverberation room”, *Appl. Acoust.*, **160**, 107127 (2020). ISSN Print: 0003-682X, ISSN Online: 1892-910X, EID: 2-s2.0-85074876947, WOS: 000512474600027, DOI: <https://doi.org/10.1016/j.apacoust.2019.107127>.

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C. Scrosati, F. Martellotta, F. Pompoli, A. Schiavi, A. Prato, D. D’Orazio, **M. Garai**, N. Granzotto, A. Di Bella, F. Scamoni, M. Depalma, C. Marescotti, F. Serpilli, V. Lori, P. Nataletti, D. Annesi, A. Moschetto, R. Baruffa, G. De Napoli, F. D’Angelo, S. Di Filippo, “Towards more reliable measurements of sound absorption coefficient in reverberation rooms: An Inter-Laboratory Test”, *Appl. Acoust.*, **165**, 107298 (2020). ISSN Print: 0003-682X, ISSN Online: 1892-910X. EID: 2-s2.0-85081276514, WOS: 000530083100035. DOI: <https://doi.org/10.1016/j.apacoust.2020.107298>.

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M. Cingolani, G. Fratoni; L. Barbaresi, D. D’Orazio, B. Hamilton, **M. Garai**, “A trial acoustic improvement in a lecture hall with MPP sound absorbers and FDTD acoustic simulations”, *Appl. Sci.*, **11**(6), 2445 (2021). ISSN: 2076-3417, CODEN: ASPCC7. EID: 2-s2.0-85103077160. WOS:000645777700001. DOI: <https://doi.org/10.3390/app11062445>.

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## National Journals

A. Cocchi, **M. Garai** “Norme I.S.O. in materia di acustica nell’edilizia” (I.S.O. Standards on building acoustics), *La Termotecnica*, year XLII n. 4, 51-56 (1988).

A. Cocchi, **M. Garai** “La normativa I.S.O. di specifico interesse per il settore edile” (I.S.O. Standards interesting specifically the building sector) *Rivista Italiana di Acustica*, **XI**(3), XLIII-LVII (1987).

A. Cocchi, **M. Garai** “Norme UNI in materia di acustica nell’edilizia” (U.N.I. Standards on building acoustics), *La Termotecnica*, year XLIII n. 2, 59-63 (1989).

A. Cocchi, **M. Garai** “Norme UNI in materia di acustica nell’edilizia” (UNI Standards on building acoustics), *Rivista Italiana di Acustica*, **XIII**(1), III-XII (1989).

A. Cocchi, **M. Garai** “Sulle unità di valutazione dei livelli sonori” (On the evaluation units of sound levels), *Rivista Italiana di Acustica*, **17**(4), 53-59 (1993).

A. Cocchi, **M. Garai**, V. Scida “Metodi avanzati per la misura del coefficiente di assorbimento acustico dei materiali” (Advanced methods for the determination of the sound absorption coefficient of materials), *Rivista Italiana di Acustica*, **18**(4), 71-84 (1994).

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**M. Garai**, S. Secchi “La progettazione acustica degli edifici con modelli di calcolo semplificati” (Acoustic design of buildings using simplified calculation models) *Bollettino Ingegneri*, anno XLIV n. 12, 7-12, Firenze, Italy (1997).

**M. Garai**, M. Montioni “Correzione acustica di un auditorium” (Acoustic correction of an auditorium) *Inarcos*, year LIV n. 596, 27-32 (1999).

**M. Garai**, F. Pompoli, “Realizzazione e calibrazione di una apparecchiatura per la misurazione della resistenza al flusso d’aria con il metodo a flusso alternato a norma UNI EN 29053” (Realization and calibration of a device for measuring the airflow resistance using the alternate airflow method according to UNI EN 29053) *Rivista Italiana di Acustica*, **25**(4), 417-424 (2001).

**M. Garai**, “Prestazioni acustiche dei solai: il quadro legislativo e normativo” (Acoustic performance of floors: the legislative and standard framework) *Rivista Italiana di Acustica*, **28**(3-4), 81-87 (2004).

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P. Bellucci, **M. Garai**, “Barriere antirumore: il disciplinare tecnico ANAS - Quando la qualità si coniuga con la filosofia del silenzio” (Noise barriers: ANAS technical specifications – When quality and philosophy of silence meet), *Strade & Autostrade*, Anno XI n. 62, 294-297 (2007).

**M. Garai**, “Espressione dell’incertezza nelle misurazioni e nei calcoli di acustica” (The expression of uncertainty in acoustic measurements and calculations), *Unificazione & Certificazione*, year LII n. 8, 45-47 (2007). ISSN 0394-9605.

**M. Garai**, G. Brero, “La marcatura CE dei sistemi antirumore per infrastrutture stradali” (CE marking of road traffic noise reducing devices), *Strade & Autostrade*, Anno XI n. 65, 263-266 (2007).

**M. Garai**, “Riscriviamo il D.P.C.M. 5/12/97” (Let’s rewrite the D.P.C.M. 5/12/97), *Rivista Italiana di Acustica*, **32**(3), 36-46 (2008).

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**M. Garai**, G. Brero, “In arrivo tre nuove norme europee sulle barriere antirumore” (Three new European standards on road traffic noise reducing devices), *Unificazione & Certificazione*, Anno LIX n. 3, 7-10 (2014). ISSN 0394-9605.

**M. Garai**, “L’acustica degli uffici nella normativa tecnica” (Office acoustics in technical standards), *Officelayout*, **159**, 28-30, (2014).

**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”, accepted for the publication on *Building and Environment*, (2015). ISSN Print: 0360-1323, OCLC: 38871233, DOI: <http://dx.doi.org/10.1016/j.buildenv.2015.07.026>, EID=2-s2.0-84939825622.

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**M. Garai**, “Barriere antirumore: è completo il quadro delle norme tecniche europee per le prove acustiche” (Noise barriers: the framework of European technical standards for acoustical tests is complete), *Unificazione & Certificazione*, anno LXII n. 3, 11-12 (2017). ISSN 0394-9605.

F. Morandi, A. Marzani, S. De Cesaris, D. D’Orazio, L. Barbaresi, **M. Garai**, “Sonic crystals as tunable noise barriers”, *Rivista Italiana di Acustica*, **40**(4), 01-19 (2016). ISSN Online: 2385-2615.

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A. Di Bella, **M. Garai**, “AIA e UNI, una collaborazione proficua” (AIA and UNI, a fruitful cooperation), *Unificazione & Certificazione*, anno LXIII n. 4, 18-19 (2018). ISSN 0394-9605.

**M. Garai**, L. Parati “Caratteristiche acustiche interne di ambienti confinati. La UNI 11532 diventa una ‘serie’” (Acoustic characteristics of enclosed spaces. UNI 11532 becomes a package), *Unificazione & Certificazione*, anno LXIII n. 4, 24-25 (2018). ISSN 0394-9605.

G. Brero, **M. Garai**, “Barriere antirumore stradali e ferroviarie”, *Unificazione & Certificazione*, anno LXIII n. 7, 39-41 (2018). ISSN 0394-9605.

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## **National Congresses**

A.Cocchi, A.Farina, **M.Garai** “Valutazione dell’isolamento acustico in locali di piccole dimensioni” (Evaluating sound insulation in small rooms), Atti XVI Congresso A.I.A., Milano, Italy (1988).

**M.Garai** “L’affidabilità dei metodi rapidi di stima dell’indice di valutazione dell’isolamento acustico in opera” (The reliability of the short methods for estimating the weighted sound insulation in the field), Atti XVIII Convegno A.I.A., L’Aquila, Italy, 221-226 (1990).

**M.Garai** “L’uso dell’analisi cepstrale per la misura del coefficiente di assorbimento acustico” (The use of cepstral analysis for measuring sound absorption), Atti XVIII Convegno A.I.A., L’Aquila, Italy, 324-329 (1990).

A.Cocchi, **M.Garai** “Valutazione di impatto ambientale di rumori impulsivi: il caso di un impianto di tiro a volo” (Environmental impact assessment of impulsive noise: the case of a clay-pidgeon shooting range), Atti XVIII Convegno A.I.A., L’Aquila, Italy, 564-569 (1990).

A.Farina, **M.Garai** “Misura in situ del coefficiente di assorbimento acustico mediante segnale periodico pseudo-random binario MLS” random (In situ measurement of sound absorption coefficient using a periodic pseudo-random signal), Atti XIX Convegno A.I.A., Napoli, Italy, 135-140 (1991).

**M.Garai**, G.Semprini, A.Cocchi “V.I.A. del rumore stradale mediante personal computer” (Environmental impact assessment of road traffic noise by using a personal computer), Atti XX Convegno A.I.A., Roma, Italy, 231-236 (1992).

A.Cocchi, **M.Garai**, G.Semprini “L’acustica del Teatro Comunale di Bologna” (The acoustics of the Teatro Comunale of Bologna), Atti XX Convegno A.I.A., Roma, Italy, 251-256 (1992).

P.Fausti, **M.Garai**, A.Cocchi “Nuovi risultati sperimentali sulla stima rapida dell’isolamento acustico in opera” (New experimental results about the short estimation of the sound insulation in the field), Atti XX Convegno A.I.A., Roma, Italy, 281-286 (1992).

**M.Garai**, P.Fausti “Analisi sperimentale di un metodo rapido di stima dell’indice di valutazione del livello normalizzato di rumore di calpestio” (Experimental analysis of a short method for estimating the weighted standardized impact sound pressure level), Atti XXI Convegno A.I.A., Padova, Italy, 261-264 (1993).

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A.Cocchi, **M.Garai**, G.Semprini “Il rumore, il benessere ambientale, la Direttiva CEE 89/106” (Noise, environmental comfort, EEC Directive 89/106), Atti Convegno Nazionale *ARIA '94*, Roma, Italy, 125-130 (1994).

**M.Garai**, M.Montioni “Sulle caratteristiche acustiche dei baffles” (On the acoustic characteristics of baffles), Atti Convegno *dBa '94 - Rumore e Vibrazioni*, Modena, Italy, 835-840 (1994).

A.Cocchi, **M.Garai**, G.Semprini “Qualità dell’aria e benessere termoigrometrico nei mezzi di trasporto” (Indoor air quality and thermal comfort in vehicles), Atti Convegno Nazionale *ARIA '94*, Roma, Italy, 440-446 (1994).

**M.Garai**, O.Pinazza “L’importanza della scelta del modello d’impedenza nella valutazione dell’effetto suolo” (The importance of the choice of the impedance model in the ground effect evaluation) Atti XXV Convegno A.I.A., Perugia, Italy, I, 431-436 (1997).

A.Cocchi, **M.Garai**, L.Tronchin, F.Tumidei “Analisi della correzione acustica degli spazi confinati mediante auralizzazione” (Analysis of the

acoustic correction of rooms by auralization) Atti XXV Convegno A.I.A., Perugia, Italy, I, 89-96 (1997).

**M.Garai**, C.Tavernelli “Riduzione dei tempi di calcolo mediante taratura nella simulazione *beam tracing* degli ambienti chiusi” (Computing time reduction by calibration in the beam tracing room acoustics simulation) Atti XXV Convegno A.I.A., Perugia, Italy, I, 437-442 (1997).

E.Lorenzini, **M.Garai**, O.Pinazza “Onde di pressione generate dal passaggio di treni veloci in gallerie ferroviarie” (Pressure waves generated by fast trains in rail tunnels) Atti 3° Convegno Nazionale CNR - Progetto Finalizzato Trasporti 2, Taormina, Italy, SpTP 3.6.1 (1997).

**M.Garai**, S.Secchi “Metodi di previsione delle prestazioni acustiche degli edifici: isolamento all’interno degli edifici” (Previsional methods of the acoustic performance of buildings: sound insulation inside buildings) Atti Convegno *Edilizia e Ambiente*, Trento, Italy, 413-436 (1998).

**M.Garai**, E.Giusti, C.Tavernelli “Progettazione di una sala polivalente mediante simulazione *beam tracing*” (Design of a multipurpose hall using a beam tracing code) Atti XXVI Convegno A.I.A., Torino, Italy, 111-114 (1998).

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**M.Garai**, M.Monari, C.Tavernelli “Progettazione acustica per il recupero della ex chiesa di Santa Maria del Carmine in Medicina” (Acoustic design for the recovering of the former church of Santa Maria del Carmine in Medicina) Atti XXVII Convegno A.I.A., Genova, Italy, 56-59 (1999).



P.Guidorzi, **M.Garai**, A.Cocchi “Un prototipo di controllo attivo del rumore in condotti a sezione rettangolare” (A prototype of active noise control in rectangular section ducts) Atti XXVII Convegno A.I.A., Genova, Italy, 613-616 (1999).

**M.Garai** “Barriere antirumore: metodi di collaudo delle caratteristiche acustiche intrinseche” (Antinoise barriers: methods to verify the compliance with specifications for intrinsic acoustic characteristics) Atti Convegno *Le barriere acustiche: progettazione e rendimento*, Alba, 27-41 (1999).

M.Bèrengier, **M.Garai** “Propagazione del rumore da traffico veicolare” (Propagation of road traffic noise) Atti Convegno *Traffico e Ambiente*, Trento, Italy, 49-62 (2000).

**M.Garai** “Misurazione in situ dell’assorbimento acustico delle superfici stradali” (In situ measurement of sound absorption of road surfaces) Atti Convegno *Traffico e Ambiente*, Trento, Italy, 157-165 (2000).

**M.Garai** “Caratteristiche acustiche delle barriere” (Acoustic characteristics of barriers) Atti Convegno *Traffico e Ambiente*, Trento, Italy, 181-197 (2000).

**M.Garai**, V.Tréfois, J.-P.Claibois, “Correlazione tra rilievi acustici e traiettorie degli aeromobili: strumenti integrati per controllare l’inquinamento da rumore in prossimità degli aeroporti” (Correlating noise data and flightpaths: integrated tools for controlling noise pollution around airports) Atti Convegno *Noise Mapping*, Bologna, Italy, 237-248 (2001).

**M.Garai**, M.Bèrengier, “Propagazione del rumore in ambiente esterno” (Outdoor noise propagation) Atti Convegno *Noise Mapping*, Bologna, Italy, 5-26 (2001).

**M.Garai**, “Propagazione del rumore in ambiente esterno” (Outdoor noise propagation) Atti Convegno *Immissione di rumore e vibrazioni da impianti civili e stabilimenti industriali*, Ferrara, 13-32 (2002).

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**M.Garai**, “Prestazioni acustiche dei solai: il quadro legislativo e normativo” (Acoustic performance of floors: the legislative and standard framework) Atti Convegno Nazionale di Acustica Edilizia, Bologna, Italy, (2004).

**M.Garai**, “Le nuove linee guida UNI sui sistemi antirumore per infrastrutture di trasporto via terra” (The new UNI guidelines on antinoise devices for ground transportation infrastructures) Atti XXXI Convegno A.I.A., Venezia, Italy, 427- 430 (2004).

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**M.Garai**, “Modelli di previsione, schermature e trattamenti fonoassorbenti” (Previsional models, screens and sound absorbing treatments) (invited lecture), Atti del seminario *Riduzione del rumore negli stabilimenti industriali: previsione, propagazione, disposizione delle macchine, schermature e trattamenti fonoassorbenti* held on the occasion of the XXXII Convegno Nazionale A.I.A., Ancona, Italy, 3-33 (2005).

G.Semprini, **M.Garai**, “Il collaudo dell’isolamento al rumore da calpestio” (The verification of the sound insulation against impact noise) (invited lecture), Atti del seminario *Il collaudo acustico degli edifici secondo il DPCM 5-12-97* held on the occasion of the XXXII Convegno Nazionale A.I.A., Ancona, Italy, 41-53 (2005).

**M.Garai**, “Linee guida per la progettazione, esecuzione e collaudo di sistemi antirumore per infrastrutture di trasporto via terra” (Guidelines for the design, realization and control of antinoise devices for ground transportation infrastructures) (invited lecture), Atti del Convegno

*Progettare il risanamento acustico. Politiche – Soluzioni – Documenti*, IV Giornata di studio sull'acustica ambientale, Firenze, Italy, 30 Marzo 2006, 93-97 (2006).

**M.Garai**, P.Guidorzi “Collaudo acustico in situ delle caratteristiche acustiche intrinseche delle barriere antirumore lungo la linea ferroviaria A.C. Torino-Novara” (In situ verification of the acoustic intrinsic characteristics of the noise barriers installed along the high speed railway line Torino-Novara), Atti XXXIII Convegno A.I.A., Ischia, Italy, ISBN 88-88942-14-9, 339-344 (2006).

**M.Garai**, O.Nicolini, A.Peretti, L. Barbaresi, “Modelli di simulazione del rumore negli ambienti di lavoro: primo round robin test italiano” (Simulation models for noise at workplace: first Italian round robin test) (invited paper), Atti Convegno *dba 2006*, Modena, Italy, 343-347 (2006).

P.Guidorzi, L.Barbaresi, **M.Garai**, “La misura dell'assorbimento acustico con diverse metodologie: camera riverberante, metodi impulsivi e tubo a onde stazionarie” (Different measurement methods of sound absorption: reverberation room, impulse methods and impedance tube), Atti XXXIV Convegno A.I.A. Firenze, ISBN 13978-88-88942-20-3, Paper 2E7 (2007).

L.Barbaresi, G.Semprini, **M.Garai**, “Valutazioni in laboratorio degli effetti della trasmissione laterale in partizioni verticali in laterizio” (Evaluation in the laboratory of flanking transmission effects in light masonry party walls), Atti XXXIV Convegno A.I.A., Firenze, ISBN 13978-88-88942-20-3, Paper 2D7 (2007).

**M.Garai**, C.Tavernelli, “Clima acustico per le strutture scolastiche e ospedaliere” (Evaluation of the acoustic environment for schools and hospitals) (invited lecture), Atti Seminario *Impatto e clima acustico: metodologie di elaborazione e procedure di valutazione*, Modena, Italy, ISBN 978-88-88942-21-1, 107-125 (2007).

**M.Garai**, “Espressione dell'incertezza in acustica applicata: stato dell'arte e prospettive” (Expression of uncertainty in applied acoustics: state of the art and perspectives) (invited lecture), Atti XXXV Convegno A.I.A., Milano, Italy, ISBN 978-88-88942-23-8, Paper 4A1-i (2008).

**M.Garai**, D. D'Orazio, “Un *toolbox* Matlab per la misura dei parametri di Ando” (A Matlab toolbox for the measurement of Ando's parameters), Atti

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