

# CURRICULUM VITAE

## Gabriele Bertagnoli

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Date of birth 20<sup>th</sup> January 1976  
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July 2022

Personal data herewith presented can be handled according to Italian Law (art. 13 D. Lgs. 196/20)

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## Academic experience

Associate Professor  
July 2022 - Present

Italian ASN (Scientific Qualification) for Associate Professor  
March 2018 - Present

Assistant Professor at Politecnico di Torino, Italy  
May 2008 - Present

Research Fellow at Politecnico di Torino, Italy  
January 2004 - April 2008

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## Education

Post-doc course "Applied Tensor Analysis for Constitutive Modelling", Delft University of Technology, Delft, The Netherlands.  
June 2004

PhD in Structural Engineering at Politecnico di Torino, Italy.  
Thesis: "Modello evolutivo non lineare per elementi membranali in cemento armato – Non linear incremental plane stress finite element for reinforced concrete structures"  
January 2001- December 2003

Post-doc course "Stability of Structures, modern problems and unconventional solutions", CISM, Udine, Italy.  
July 2001

Master degree course in Civil Engineering at Politecnico di Torino, Italy.

Thesis: "Elemento finite per analisi bidimensionale nel calcestruzzo armato – Two dimensional finite element for concrete structures"

Degree obtained with 109/110.

September 1994 – December 2000

Liceo Scientifico Statale Alessandro Volta, Torino, Italy

Italian secondary school diploma. Scientific certificate obtained with 60/60 with laude.

September 1989 – July 1994

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## Languages

<b>Italian</b>	Mother Tongue
<b>English</b>	Full professional proficiency

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## Research Activity

Gabriele Bertagnoli develops research projects within the following research fields:

- Structural health monitoring.
- Development of embedded force sensors for concrete structures.
- Cracking, bond and lap issues in reinforced concrete structures.
- Young hardening concrete and massive castings.
- Analysis and design of composite steel-concrete structures.
- Rain wind induced vibrations in stay-cables.
- Prestressed and composite steel-concrete bridges.
- Analysis and design of reinforced and prestressed concrete structures.
- Optimization of reinforcement layout in concrete structures.
- Deterioration of reinforced concrete structures.
- Precast concrete structures.
- Use of fly ashes in stabilized road bases.

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## Leadership of research projects

### Private funding

#### **Research project for Technital s.p.a. "Due diligence analysis of realization phases of Khor al Zubair Immersed Tunnel in Iraq"**

Study of construction phases and curing technology for the realization of the segments of a pre-fabricated highway immersed tunnel under the port of Khor al Zubair.

Funded amount: 15.000 €.

From 06-2022 to present

**Research project for Movyon s.r.l. and Elis Innovation Lab “Strengthening system for damaged bridges half-joints”**

Study of a steel strengthening structure to be applied to corroded and damaged reinforced concrete half joints in concrete bridge beams.

Funded amount: 35.000 €.

From 04-2022 to present

**Research project for Sintecna s.r.l. and Tecne Autostrade S.p.A. “Study of concrete mix design for the realization and repair of structural joints in bridge slabs”**

Study of the early age properties of concrete mix design to optimize their performance in the realization of joints in bridge slabs in terms of early opening to traffic and durability.

Funded amount: 35.000 €.

From 05-2021 to 07-2021 and from 11-2021 to 03-2022

**Research project for AutostradeTech S.p.A. “Nonlinear Analysis of bridge decks under different damage scenarios for the definition of optimum SHM layout”**

Creation of a digital twin of an existing bridge monitored with different sensors technologies. Implementation on the digital twin of different damage scenarios (corrosion of reinforcement, cover spalling, prestressing losses, etc.) in order to understand which kind of damage can be detected by the sensors.

The responsibility of this project is shared with prof. L. Giordano.

Funded amount: 90.000 €.

From 01-2021 to 12-2021

**Research project for Studio A&A Ingegneri Associati “Evaluation of thermo-mechanical issues in slab foundations”**

Design of construction phases and settlement analysis of the foundations of two storing facilities of Fiat Chrysler Automobiles to control differential settlements caused by soil heterogeneity and slab deformability.

Funded amount: 15.000 €.

From 10-06-2019 to 10-09-2019

**Research project for Sintecna s.r.l. and Edile Engineering and Construction “Evaluation of thermo-mechanical issues in massive concrete castings”**

Design of construction phases of the foundations of the Galeazzi Orthopaedic Hospital in Milan to control autogenous cracking due to concrete hardening and autogenous deformations.

Funded amount: 40.000 €.

From 14-12-2018 to 14-04-2019

**Research project for Safecertifiedstructures Tecnologia s.r.l. “Structural Health Monitoring of civil engineering structures”**

Development of a procedure to process data coming from SHM on highway tunnels and bridges.

Funded amount: 28.000 €.

From 13-07-2018 to 12-07-2019

Publications:

- Abbasi, M.; Anerdi, C.; Bertagnoli G. (in print) An embedded stress measure of concrete: a new sensor able to overcome rheology issues. In: Proceedings of Italian Concrete Days 2021, Napoli 14-17 April 2021, pp. 1-8.
- Bertagnoli, G.; Luca, F.; Malavisi, M.; Melpignano, D.; Cigada, A. (2020) A large scale SHM system: A case study on pre-stressed bridge and cloud architecture. In: Dynamic of Civil Structures Vol. 2 – Proceedings of the 37th IMAC, A Conference and Exposition on Structural Dynamics (Conference

Proceedings of the Society for Experimental Mechanics Series), Orlando, 28-31 January 2019, pp. 75-83. ISBN 978-3-030-12114-3 978-3-030-12115-0.

**Research project for S.i.t.a.f. S.p.a per "Analysis of the effect of abnormal loads on the secondary bridges A32 Highway (Torino-Bardonecchia)"**

Development of a software able to calculate the effects of an abnormal load moving on a set of existing bridges and compare it to normal traffic effects.

Funded amount: 37.000 €.

From 01-11-2017 to 23-05-2018

Publications:

- Gino, D.; Castaldo, P.; Bertagnoli, G.; Giordano, L.; Mancini, G. (2020) Partial factor methods for existing structures according to fib Bulletin 80: Assessment of an existing prestressed concrete bridge - In: STRUCTURAL CONCRETE Vol. 21, n.1, pp. 15-31, - ISSN 1464-4177.

**Research project for S.i.t.a.f. S.p.a per "Analysis of the effect of abnormal loads on the bridges overcrossing A32 Highway (Torino-Bardonecchia)"**

Development of a software able to calculate the effects of an abnormal load moving on a set of existing bridges and compare it to normal traffic effects.

Funded amount: 38.000 €.

From 01-11-2017 to 23-05-2018

**Research project for Safecertifiedstructures Tecnologia s.r.l. "Structural Identification of civil engineering structures with innovative sensors"**

Development of a software able to perform SHM on highway tunnels by means of clinometers.

Funded amount: 27.500 €.

Publications:

1. Alovisi I.; Bertagnoli G.; Benini L.; Cigada A.; Darò P.; Malavisi M.; Mancini G.; Meda A.; Melpignano D., Murari B., Riva P., Savoia M. (2018) Un sistema competitivo per il monitoraggio e la diagnostica della salute strutturale basato sul cloud. In: Structural, vol. 215, pp. 1-14. - ISSN 2282-3794.
2. Anerdi C.; Gino D.; Malavisi M.; Bertagnoli G. (2018) A sensor for embedded stress measure of concrete: testing and material heterogeneity issues In: Italian Concrete Days Giornate AICAP 2018 Congresso CTE Il Calcestruzzo Strutturale Oggi Teoria – Impieghi – Materiali – Tecniche, Milano / Lecco 13-16 June 2018, pp. 1-8.

From 03-05-2017 to 02-05-2018

**Research project for ST Microelectronics S.p.a. "Structural Health Monitoring by means of MEMS Devices"**

Development of a software able to clean the data coming from clinometers and perform SHM.

Funded amount: 22.500 €.

From 04-07-2016 to 04-07-2017

## Public funding

**Progetto PON INSIST – Sistema di Monitoraggio INtelligente per la Sicurezza delle infraSTruttuRe urbane**

Industrial Research Project of the Italian Ministry of Research (MIUR) in the field of "Smart Secure & Inclusive Communities". Chairman of research program prof. E. Cosenza, Total Funded amount € 7.510.000 Leadership of the Politecnico di Torino research Unit.

Funded amount for the research unit: € 160.000

Publications:

From 04-04-2019

**Smart Cities and Communities and Social Innovation (MIUR) "Smart Concrete - Sviluppo di tecnologie e sistemi efficienti, ad alte prestazioni e a basso costo, per il monitoraggio strutturale interno di edifici ed opere civili in calcestruzzo e per la loro messa in sicurezza" (code SCN\_00190)**

**[Italian University and Research Ministry industrial research project "Smart Concrete – Development of technologies and efficient systems with high performances and low cost for structural health monitoring and retrofitting of concrete buildings and infrastructures"]**

Leadership of the Politecnico di Torino research Unit.

Funded amount for the research unit: € 684.903

Publications:

[From 01-11-2017 to 31-03-2018](#)

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## **Collaboration to research projects**

### **Private funding**

**Research project for Buzzi Unicem S.p.a. "Mechanical characterization of concrete made with aluminium sulphate cement."**

Mechanical and rheological characterization of a concrete mix realized with aluminium sulphate cement by means of laboratory testing.

Team member of the research unit. Chairman prof. G. Mancini.

Funded amount: 40.000 €

Publications:

- Anerdi C.; Bertagnoli G.; Canonico F.; Malavisi M.; Tondolo F.; Mancini G. (2018) Calcium Sulfoaluminate based Concrete Mechanical Characterization In: World Multidisciplinary Civil Engineering-Architecture-Urban Planning Symposium - WMCAUS 2018, Prague, 18–22 June 2018 pp. 1-10.

[From 17-12-2013 to 17-12-2014](#)

**Research project for Società Consortile a r.l. Torre "Study of Massive concrete casting"**

Support to the design of the massive foundation of the Intesa San Paolo Skyscraper in Torino. Realization of the 2nd world biggest concrete casting of 2010.

Team member of the research unit. Chairman prof. G. Mancini.

Funded amount: 45.000 €

Publications:

- Bertagnoli G.; La Mazza D.; Mancini G.; Tondolo F. (2016) Design of massive casting controlling early age properties of concrete. In: Concrete under Severe Conditions - Environment and Loading / Matteo Colombo, Marco di Prisco. Trans Tech Publications Ltd, pp. 126-133. ISBN 9783035710441

[From 09-06-2010 to 09-09-2010](#)

**Research project for ENEL "Use of coal fly ashes in the production of stabilized road bases and industrial pavements"**

Use of fly ashes for stabilized road bases.

Team member of the research unit. Chairman prof. G. Mancini.

Funded amount: 50.000 €

Publications:

- Mancini G.; Bertagnoli G.; Gino D.; Malavisi M.; Pasqualini A. (2016) Use of coal fly ash in concrete mixtures for pavements foundations. In: "Evoluzione e Sostenibilità delle Strutture in calcestruzzo" – Italian Concrete Days Giornate AICAP 2016 Congresso CTE, Roma, 27-28 Ottobre 2016

[From 20-07-2009 to 10-03-2011](#)

**Research project for Sintecna s.r.l. "Study of early age concrete self restrained deformations on foundation caissons of Venice MOSE Dams"**

Design of construction phases of the foundations of the MOSE Venice dam system to control autogenous cracking. In detail the following structures have been studied:

- Malamocco gate
- Treporti gate
- S. Nicolò gate
- Chioggia gate
- Chioggia abutment

Team member of the research unit. Chairman prof. G. Mancini.

Funded amount: 73.000 €

Publications:

- Bertagnoli G.; Mancini G.; Tondolo F. (2009) Numerical modeling of early age concrete hardening. In: Magazine of Concrete Research, vol. 61, pp. 299-307. - ISSN 0024-9831
- Bertagnoli G.; Mancini G. (2012) Autogenous deformations in massive concrete structures. In: RILEM-JCI International Workshop on Crack Control of Mass Concrete and Related Issues concerning Early-Age of Concrete Structures - Concrack 3 - Control of Cracking in Concrete Structures 3, Paris, 15-16 March 2012. pp. 167-180
- Bertagnoli G.; Anerdi C.; Malavisi M.; Zoratto N. (2017) Autogenous Crack Control during Construction Phases of MOSE Venice Dams. In: World Multidisciplinary Civil Engineering-Architecture-Urban Planning Symposium - WMCAUS 2017, Prague, 12–16 June 2017. pp. 1-10

From 01-01-2009 to 31-08-2011

### **Research project for ITALFERR (Italian Railroad Authority) “Study of cracking phenomena of some railroad viaducts of the High Speed/High Capacity line Milano-Bologna in proximity of Modena”**

Study of the cracking phenomena that took place just after the casting on the piers of some railway viaducts because of hydration heat and rheological properties of concrete.

Team member of the research unit. Chairman prof. G. Mancini.

Funded amount: 50.000 €

Publications:

- Bertagnoli G.; Mancini G.; Tondolo F. (2011) Early age cracking of massive concrete piers. In: Magazine of Concrete research, vol. 63 n. 10, pp. 723-736. - ISSN 0024-9831

From 10-03-2005 to 17-01-2006

### **Research project for Guerrini Prefabbricati S.p.A. “Failure Mechanism of precast socket foundations”**

Failure mechanism of a precast socket foundation.

Team member of the research unit. Chairman prof. R. Rossetti.

Funded amount:

Publications:

- Rossetti R; Bertagnoli G.; Garlone G; Antoniotti E. Padovani C; Fiorio S (2006) Comportamento a rottura di plinto a pozzetto prefabbricato. In: 16° Congresso C.T.E, 9-11/11/2006.

Form 01-01-2005 to 31-10-2005

## **Public funding**

### **PRIN 2017 – Life-long optimized structural assessment and proactive maintenance with pervasive sensing techniques**

Italian National Interest research Program 2017. Chairman of research program prof. M. Savoia.

Member of the research unit of Politecnico di Torino. Chairman of research unit prof. P. Castaldo.

Funded amount: € 108.000

Publications:

From 13-03-2019

### **Progetto ReLUIIS-DPC 2019-2021 Accordo-Quadro "Attività di predisposizione della normativa tecnica per la prevenzione e la riduzione del rischio sismico (lettera d), comma 2 dell'art. 19 del D.L. 2 gennaio 2018, n.1"**

[Laboratories University Network of Seismic Engineering and Civil Protection Department project “Technical code redaction activity for prevention and seismic hazard reduction”.

Member of research unit "WP10: Contributi normativi relativi a Costruzioni Esistenti in Muratura " Chairman of research unit prof. F. Di Trapani.

Funded amount:

Publications:

- Di Trapani, F.; Sarhosis, V.; Tomaselli, G.; Bertagnoli, G. (2020) Fragility Curves for Assessing the Seismic Vulnerability of Multi-Drum Ancient Columns. In: 5th World Multidisciplinary Civil Engineering-Architecture-Urban Planning Symposium, WMCAUS 2020 (IOP Conference series: Materials science and Engineering – vol. 960 Section 2), Prague, 1–5 September 2020, pp. 1-10.
- Di Trapani, F.; Cirelli, S.; Bertagnoli, G.; Malavisi, M.; Ferrotto M. F. (2019) Out-of-Plane fragility of infilled frames with and without prior damage. In: XVIII Convegno ANIDIS L'ingegneria Sismica in Italia, Ascoli Piceno, 15-19 September 2019, pp. 1-9.

From 01-01-2019

**Progetto ReLUIS-DPC 2014-2018 Accordo-Quadro "Supporto alle attività di gestione tecnica dell'emergenza e connesse ai programmi di prevenzione sismica, per lo sviluppo della conoscenza e l'assistenza alla redazione di norme tecniche, per la collaborazione alle attività di formazione, comunicazione e divulgazione"**

[Laboratories University Network of Seismic Engineering and Civil Protection Department project "Support of technical management of seismic emergency, prevention, codes redaction, formation courses, communication and divulgation".

Member of research unit "WP6: Capacità sismica di tamponature ed interventi di rafforzamento" Chairman of research unit prof. F. Di Trapani.

Funded amount:

Publications:

- Di Trapani F.; Bertagnoli G.; Ferrotto M. F.; Gino D. (2018) Empirical equations for the direct definition of stress-strain laws for fiber-section-based macromodeling of infilled frames - In: JOURNAL OF ENGINEERING MECHANICS, vol. 144, n. 11, pp. 1-17, ISSN 0733-9399.
- Di Trapani F.; Malavisi M.; Bertagnoli G.; Cavaleri L. (2018) Evaluation of fragility of infilled frame structures subject aftershocks by means of double incremental dynamic analysis approach. In: 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018, pp. 1-12.
- Di Trapani F.; Bertagnoli G.; Gino D. (2017) A semi-empirical stress-strain model for equivalent strut fiber-section modelling of infilled frames. In: XVII Convegno ANIDIS - L'ingegneria sismica in Italia, Pistoia, 17-21 September 2017, ISBN 978-886741-8541.
- Di Trapani F.; Bertagnoli G.; Mancini G.; Gino D.; Malavisi M. (2017) Definition of a fiber macro-model for nonlinear analysis of infilled frames. In: 6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2017, 15-17 June 2017, Rhodes Island, Greece, ISBN 9786188284425.
- Di Trapani F.; Malavisi M.; Bertagnoli G.; Carbone V.I. (2017) A IDA based Framework for the Assessment of Seismic Fragility of Infilled Frames with and without prior Seismic Damage. In: XVII Convegno ANIDIS - L'ingegneria sismica in Italia, Pistoia, 17-21 September 2017, ISBN 978-886741-8541.

From 01-01-2017 to 31-12-2018

**Progetto ReLUIS-DPC 2014-2018 Accordo-Quadro "Supporto alle attività di gestione tecnica dell'emergenza e connesse ai programmi di prevenzione sismica, per lo sviluppo della conoscenza e l'assistenza alla redazione di norme tecniche, per la collaborazione alle attività di formazione, comunicazione e divulgazione"**

[Laboratories University Network of Seismic Engineering and Civil Protection Department project "Support of technical management of seismic emergency, prevention, codes redaction, formation courses, communication and divulgation".

Member of research unit "WP1: Capacità sismica di elementi strutturali esistenti in c.a.: travi, pilastri, nodi e pareti" Chairman of research unit prof. G. Mancini.

Funded amount:

Publications:



- Mancini G., Allaix D.L., Bertagnoli G. (2014) Comparison between safety formats in nonlinear analysis of a reinforced concrete structure. In: 9<sup>th</sup> International Diana Users Meeting, Parma, 4/5-November-2014.
- Bertagnoli G.; La Mazza D.; Mancini G. (2015) Effect of concrete tensile strength in non linear analyses of 2D structures - a comparison between three commercial finite element softwares. In: 3rd International Conference on Advances in Civil, Structural and Construction Engineering - CSCE 2015, Roma, 10-11December 2015. pp. 104-111
- Mancini G.; Bertagnoli G.; La Mazza D.; Gino D. (2016) Comparison between non-linear numerical models for R.C. shear walls under cyclic loading. In: "Evoluzione e Sostenibilità delle Strutture in calcestruzzo" – Italian Concrete Days Giornate AICAP 2016 Congresso CTE, Roma, 27-28 Ottobre 2016 - pp. 1-8. - ISBN 978-88-99916-02-2
- Gino D.; Bertagnoli G.; La Mazza D.; Mancini G. (2017) A Quantification of Model Uncertainties in NLFEA of R.C. Shear Walls Subjected to Repeated Loading. In: INGEGNERIA SISMICA, vol. 34 n. Spacia, pp. 79-91. - ISSN 0393-1420

From 01-01-2014 to 31-12-2017

**Smart Cities and Communities and Social Innovation (MIUR) "Smart Concrete - Sviluppo di tecnologie e sistemi efficienti, ad alte prestazioni e a basso costo, per il monitoraggio strutturale interno di edifici ed opere civili in calcestruzzo e per la loro messa in sicurezza" (code SCN\_00190)**

[Italian University and Research Ministry industrial research project "Smart Concrete – Development of technologies and efficient systems with high performances and low cost for structural health monitoring and retrofitting of concrete buildings and infrastructures"]

Member of research unit of Politecnico di Torino. Chairman of research unit prof. G. Mancini.

Funded amount: € 684.903

Publications:

From 01-08-2013 to 01-11-2017

**Progetto ReLUIIS 2005-2008**

[Laboratories University Network of Seismic Engineering project 2005-2008]

Member of the research unit "Linea 3 – Valutazione e riduzione del rischio sismico dei ponti esistenti" [Line 3 – Evaluation and reduction of seismic hazard in existing bridges] Chairmen of research unit prof. G. Mancini and prof. P.E. Pinto.

Funded amount:

Publications:

From 01-01-2007 to 31-12-2007

**Research project for Regione Piemonte "Evaluation of the properties of Regione Piemonte within the Stupinigi and the river Po environmental parks"**

Evaluation of the structural safety of historical masonry buildings belonging to the Royal Stupinigi complex in Torino (IT).

Team member of the research unit. Chairman prof. R. Roscelli.

Publications:

From 01-02-2010 to 31-05-2010

**PRIN 2005 "Modellazione dei processi di deterioramento delle strutture in c.a."**

[Italian National Interest research Program 2005 "Modelling of deterioration process of reinforced concrete structures"] Chairman of research program prof. G. Mancini.

Member of research unit "Modellazione della riduzione di aderenza per effetto di corrosione e valutazione della sicurezza residua" Chairman of research unit prof. G. Mancini.

Funded amount: € 125.000

Publications:

- Bertagnoli G.; Mancini G; Tondolo F (2006) Bond deterioration due to corrosion and actual bearing capacity. In: second fib congress, Naples, June 5-8 2006 - ISBN: 9788889972052



- Bertagnoli G.; Mancini G.; Tondolo F. (2007) Modelling R.C. Structures in presence of reinforcement corrosion. In: International RILEM Workshop on Integral Service Life Modelling of Concrete Structures, Guimares, 05-06/11/2007. pp. 247-254 – ISBN: 9782351580585

From 01-01-2005 to 31-12-2006

**PRIN 2003 "Le proprietà chimico-fisico-meccaniche dei calcestruzzi autocompattanti e le loro implicazioni strutturali"**

[Italian National Interest research Program 2003 “Chemical-Physical-Mechanical properties of self-compacting concretes and their structural use.”] Chairman of research program prof. F. Mola.

Member of the research unit "Comportamento dei calcestruzzi autocompattanti (SCC) nella riparazione e consolidamento dei ponti" Chairman of research unit prof. G. Mancini.

Funded amount: € 66.600

Publications:

From 01-01-2003 to 31-12-2004

**PRIN 2002 "Identificazione, modellazione, analisi e controllo delle incertezze nel progetto dei ponti di grande luce"**

[Italian National Interest research Program 2002 “Identification, modelling and control of model uncertainties in long span bridges”] Chairman of research program prof. P.G. Malerba.

Member of the research unit "Effetto delle incertezze di modello nel progetto dei ponti" Chairman of research unit prof. G. Mancini.

Funded amount: € 80.000

Publications:

- Bertagnoli G.; Giordano L.; Mancini G. (2004) Safety format for the nonlinear analysis of concrete structures. In: Studi e Ricerche, vol. 25, pp. 31-56. - ISSN 1121-6069
- Bertagnoli G.; Carbone V.I.; Giordano L.; Mancini G. (2004) Safety format for non-linear analysis. In: Concrete Structures: the Challenge of Creativity. fib Symposium 2004, Avignon, 26-28 April 2004.
- Bertagnoli G.; Carbone V.I.; Giordano L.; Mancini G. (2004) Coupling of prestressing tendons in segmental construction. In: fib Symposium on Segmental Construction in Concrete - Delhi, 26-29 Novembre.
- Bertagnoli G.; Carbone V.I.; Mancini G. (2007) Local effects of coupling of prestressing tendons in structural joints. In: fib Symposium "Concrete structures - Stimulators of development", Dubrovnik, 20-23 May 2007, pp. 607-614 – ISBN: 9789539542830

From 01-01-2002 to 31-12-2003

**PRIN 2001 "Ponti e viadotti: evoluzione della concezione strutturale nel progetto e nella riabilitazione"**

[Italian National Interest research Program 2001 “Bridges and Viaducts: evolution of conceptual design for construction and repair”] Chairman of research program prof. E. Siviero.

Member of the research unit "Problemi avanzati nella progettazione e riabilitazione di ponti e viadotti". Chairman of research unit prof. G. Mancini.

Funded amount: € 54.228

Publications:

- Bertagnoli G.; Carbone V.I.; Giordano L.; Mancini G. (2001) Repair and strengthening of damaged prestressed structures. In: Taerwe L. (ed.). Durability of Post tensioned tendons: Technical Report. Proceedings of a workshop held at Ghent University on 15-16 November 2001, fib Bulletin n. 15, pp. 139-153 – ISSN 1562-3610; ISBN 2-88394-055-X
- Bertagnoli G.; Carbone V.I.; Giordano L.; Mancini G. (2003) Design models for deteriorated concrete bridges. In Bontempi, F (ed.) System-based Vision for Strategic and Creative Design, Vols. 1-3 Pages: 1777-1782. 2nd International Conference on Structural and Construction Engineering, Roma, 23-26 settembre 2003. - ISBN:90-5809-599-1

From 01-01-2001 to 31-12-2002

# Scientific Activity

Gabriele Bertagnoli is author of 20 papers and a discussion on International Journals, 1 on national journals, 5 book chapters, 69 papers in conference proceedings and 2 patents.

## List of scientific publications

### International Journal papers

1. Di Trapani, F.; Vizzino, A.; Tommaselli, G.; Sberna A. P.; Bertagnoli, G. (2022) A new empirical formulation for the out-of-plane resistance of masonry infills in reinforced concrete frames. In: ENGINEERING STRUCTURES, Vol. 266 n. 6:114422, ISSN 0141-0296.
2. La Mendola, L.; Oddo, M. C., Papia, M.; Pappalardo, F.; Pennisi, A., Bertagnoli, G.; Di Trapani, F.; Monaco, A.; Parisi, F.; Barile, S. (2021) Performance of two innovative stress sensors imbedded in mortar joints of new masonry elements. In.: CONSTRUCTION AND BUILDING MATERIALS, Vol. 297, 123764. ISSN 0950-0618.
3. Di Trapani, F.; Tommaselli, G.; Cavaleri, L.; Bertagnoli, G. (2021) Macroelement Model for the Progressive-Collapse Analysis of Infilled Frames. In: JOURNAL OF STRUCTURAL ENGINEERING, Vol. 147 n. 6, pp.1-19, ISSN 0733-9445.
4. Gino, D.; Anerdi, C.; Castaldo, P.; Ferrara, M.; Bertagnoli, G.; Giordano, L. (2020) Seismic Upgrading of Existing Reinforced Concrete Buildings Using Friction Pendulum Devices: A Probabilistic Evaluation. In: APPLIED SCIENCES, Vol. 10 n.24, pp. 1-17, ISSN 2076-3417.
5. Castaldo, P.; Gino, D.; Bertagnoli, G.; Mancini, G. (2020) Resistance model uncertainty in non-linear finite element analyses of cyclically loaded reinforced concrete systems. In: ENGINEERING STRUCTURES, Vol. 211, Art. n. 110496, ISSN 0141-0296.
6. Gino, D.; Castaldo, P.; Bertagnoli, G.; Giordano, L.; Mancini, G. (2020) Partial factor methods for existing structures according to fib Bulletin 80: Assessment of an existing prestressed concrete bridge. In: STRUCTURAL CONCRETE, Vol. 21, n.1, pp. 15-31, - ISSN 1464-4177.
7. Castaldo P.; Gino D.; Bertagnoli G.; Mancini G. (2018) Partial safety factor for resistance model uncertainties in 2D non-linear finite element analysis of reinforced concrete structures. In: ENGINEERING STRUCTURES, Vol. 176, pp. 746-762, ISSN 0141-0296.
8. Di Trapani F.; Bertagnoli G.; Ferrotto M. F.; Gino D. (2018) Empirical equations for the direct definition of stress-strain laws for fiber-section-based macromodeling of infilled frames - In: JOURNAL OF ENGINEERING MECHANICS, vol. 144, n. 11, pp. 1-17, ISSN 0733-9399.
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## Patents

1. Bertagnoli G. (Inventor); Safecertifiedstructure Ingegneria s.r.l. (Company). Metodo e dispositivo d'indagine per la misurazione di tensioni in una struttura di agglomerato. Italia: Ministero dello Sviluppo Economico - Ufficio Italiano Brevetti e Marchi, Domanda numero 102016000037314, Presented: 12/04/2016
2. Abbasi M.; Bertagnoli G.; Caltabiano D.; Guidetti E. (Inventors); ST Microelectronics s.r.l. (Company). Sensore di sforzo per il monitoraggio dello stato di salute di strutture fabbricate quali costruzioni, edifici, infrastrutture e simili. Italia: Ministero dello Sviluppo Economico - Ufficio Italiano Brevetti e Marchi, Presented: 20/04/2017

## Peer Review activity

Peer review activity for the following international journals is done:

Applied Sciences – MDPI – Online ISSN 2076-3417

Engineering Structures – Elsevier – ISSN 0141-0296

Journal of Constructional Steel Research – Elsevier – ISSN 0143974X

Journal of Bridge Engineering – ASCE – ISSN 1084-0702

Materials and structures – Springer – ISSN 1359-5997  
Sensors – MDPI – Online ISSN: 1424-8220  
Strain - John Wiley & Sons Ltd - Online ISSN: 1475-1305  
Structural Engineering and Mechanics – TecnoPress – ISSN 1225-4568  
Structural Concrete – *fib* – ISSN 1464-4177

## Participation to scientific committees

Gabriele Bertagnoli is part of the scientific committee of the following international conferences:

- a) Italian Concrete Days 2016 (Aicap CTE)
- b) Italian Concrete Days 2018 (Aicap CTE)
- c) Italian Concrete Days 2020 (Aicap CTE)
- c) Italian Concrete Conference 2022 (CTE)

## Participation to scientific organizations

Academic Scientific Council of Uzbekistan (nominated from the Cabinet of the Ministers of the Republic of Uzbekistan)

From January 2020 to Present

Deputy Member of the Italian delegation *fib* (Fédération Internationale du Béton) General Assembly

From June 2011 to June 2016

Member of *fib* (Fédération Internationale du Béton) Task Group 3.3 "Assessment/evaluation procedures for existing structures" (formerly SAG7)

From April 2010 to Present

Member of *fib* (Fédération Internationale du Béton) Task Group 2.6 "Composite steel-concrete construction" (formerly SAG6)

From June 2010 to Present

Technical Secretary of CEN TC 250

Collaboration and support to Project Team of TC250 during the release of EN1992-2 Eurocode 2-2: Design of Concrete structures - Part 2 - Concrete Bridges

From January 2004 to December 2007

## Academic honours and awards

### 6th International PhD Symposium (Zurich) 2006

Organized by *fib* (Fédération Internationale du béton) and ETH Zurich

Best Ph.D. Thesis of 2006 in the field of concrete structures.

First Prize for the contribution "Nonlinear Finite Element for Reinforced Concrete Structures in Plane Stress".

### Prize: “Premio Memoria Congresso CTE 2018”

Assigned on 16<sup>th</sup> April 2020 to the paper

Castaldo, P.; Gino, D.; La Mazza, D.; Bertagnoli, G.; Carbone, V. I.; Mancini, G.; Assessment of the Partial Safety Factor Related to Resistance Model Uncertainties in 2D NLFEMs of R.C. Systems.

## Participation to Conferences and Congresses

Gabriele Bertagnoli presented 25 memories in 18 conferences and congresses:

WMCAUS 2020 – 5<sup>th</sup> World Multidisciplinary Civil Engineering Architecture Urban Planning Symposium, Prague, 01-05 September 2020.

- 1) Fragility Curves for Assessing the Seismic Vulnerability of Multi-Drum Ancient Columns.
- 2) Cracking analysis of plane stress reinforced concrete structures.

WMCAUS 2019 – 4<sup>th</sup> World Multidisciplinary Civil Engineering Architecture Urban Planning Symposium, Prague, 17-21 June 2019.

- 3) Evaluation of internal actions in tunnel lining applying genetic algorithms to monitoring data.
- 4) Large Scale Monitoring System for Existing Structures and Infrastructures.

WMCAUS 2018 – 3<sup>rd</sup> World Multidisciplinary Civil Engineering Architecture Urban Planning Symposium, Prague, 18-22 June 2018.

- 5) Probabilistic assessment of laps and anchorages strength in reinforced concrete structures.
- 6) Calcium Sulfoaluminate based Concrete Mechanical Characterization.
- 7) Model uncertainties in f.e.m. analyses of punching failures of concrete slabs

WMCAUS 2017 – 2<sup>nd</sup> World Multidisciplinary Civil Engineering Architecture Urban Planning Symposium, Prague, 12-16 June 2017.

- 8) Prediction of cracking induced by indirect actions in R.C. structures.
- 9) Autogenous crack control during construction phases of MOSE Venice dams.

3rd International Conference on Advances in Civil, Structural and Construction Engineering - CSCE 2015, Roma, 10-11 December 2015

- 10) Effect of concrete tensile strength in nonlinear analyses of 2D structures - a comparison between three commercial finite element softwares.

16th European Bridge Conference, Edinburgh, 23 - 25 June 2015

- 11) Effect of Endogenous Deformations in Composite Bridge Beams
- 12) Rain-Wind Induced Vibrations in Stay Cables: a Parametric Study

9th International DIANA users meeting, Parma, 4-5 November 2014

- 13) Comparison between safety formats in nonlinear analysis of a reinforced concrete structure

*fib* Symposium Tel Aviv 2013, Tel Aviv, 22-24 April 2013

- 14) Optimum Reinforcement Design in Concrete Membrane Elements

ACES Workshop, Corfù, 10-12 October 2010

- 15) Orthotropic Model for the Analysis of Beams with Corrugated Steel Webs

7th International DIANA Users Meeting, Brescia, 17 June 2010

- 16) Autogenous deformations analysis in MOSE concrete caissons.

3<sup>rd</sup> *fib* Congress and Exhibition, Washington, D.C. (USA), 29 May - 2 June 2010

- 17) Finite element modelling of beams under prevalent shear actions.

Symposium in honour of Prof. Toniolo, Milano, 5 December 2008.

- 18) On the maximum punching shear resistance adjacent to the column.

Congresso C.T.E, Roma, 5-8 November 2008

19) Modellazione resistente dei solai alveolari.

*fib* Symposium "Concrete structures - Stimulators of development", Dubrovnik, 20-23 May 2007

20) Local effects of coupling of prestressing tendons in structural joints.

21) Early age cracking of massive concrete piers.

16° Congresso C.T.E, Parma, 9-11 November 2006

22) Comportamento a rottura di plinto a pozzetto prefabbricato.

6<sup>th</sup> International PhD Symposium in Civil Engineering, Zurigo, 23-26 August 2006

23) Non linear finite element for reinforced concrete structures in plane stress.

2<sup>nd</sup> *fib* congress, Napoli, 5-8 June 2006

24) A compact finite element model for N.L. analysis of concrete structures.

ISEC-02 2<sup>nd</sup> International Conference on Structural Engineering Construction, Roma, 23-26 September 2003

25) Skew reinforcement design in reinforced concrete two dimensional elements.

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## Teaching Experience

**Architectural shapes in structural engineering** - Architecture and Design Course - Master Degree  
Politecnico di Torino

Professor: Academic years 2020/21, 2019/20, 2018/19, 2017/18, 2016/17, 2015/16, 2014/15

**Bridge Design** - Civil Engineering Course – Master Degree - Politecnico di Torino

Professor: Academic years 2018/19, 2017/18

Lecturer: Academic years 2020/21, 2019/20, 2016/17, 2015/16, 2014/15, 2013/14, 2012/13, 2011/12, 2010/11, 2009/10, 2008/09, 2006/07, 2005/06

**Computer aided design of structures** - Civil Engineering Course - Master Degree - Politecnico di Torino

Lecturer: Academic years 2017/18, 2016/17, 2015/16, 2014/15, 2013/14, 2012/13, 2009/10, 2008/09, 2006/07, 2002/03, 2001/02

**Computer aided structural design** - 1<sup>st</sup> Architecture Faculty – Bachelor Degree - Politecnico di Torino

Professor: Academic year 2006/07

**Design of concrete structures** - Civil Engineering Course - Master Degree - Politecnico di Torino

Lecturer: Academic years 2014/15, 2013/14, 2012/13

**Elements of structural analysis** - Architecture and Design Course – Bachelor Degree - Politecnico di Torino

Professor: Academic year 2012/13

**Structural conceptual design** - Architecture and Design Course – Bachelor Degree - Politecnico di Torino

Professor: Academic year 2013/14

### Structural design

Civil Engineering Course - Bachelor Degree - TTPU Tashkent

Professor: Academic years 2020/21, 2019/20, 2018/19, 2017/18

Civil Engineering Course - Bachelor Degree - Politecnico di Torino

Lecturer: Academic years 2015/16, 2010/11, 2008/09, 2006/07, 2003/04

Civil Engineering for Water Management Course – Bachelor Degree - Politecnico di Torino, (Mondovi)

Lecturer: Academic year 2004/05

Building Engineering Course - Bachelor Degree - Politecnico di Torino

Lecturer: Academic years 2002/03, 2001/02

1<sup>st</sup> Architecture Faculty - Bachelor Degree - Politecnico di Torino

Lecturer: Academic years 2002/03, 2001/02, 2000/01

### **Structural design II**

Civil Engineering Course – Master Degree - Politecnico di Torino

Professor: Academic years 2021/22

Building Engineering Course – Master Degree - Politecnico di Torino

Professor: Academic years 2020/21, 2019/20, 2011/12, 2010/11

Civil Engineering Course - Master Degree - Politecnico di Torino

Lecturer: Academic year 2002/03

**Structural modelling and analysis** – Applied Mathematics for Engineering Course – Master Degree - Politecnico di Torino

Lecturer: Academic year 2003/04

## **Other teaching experiences**

Post-laurea Master of Politecnico di Torino: **Forensic Engineering**, Torino Italy.

December 2018

Post-laurea Master of Politecnico di Torino: **Design and construction of tall buildings**, in partnership with Intesa Sanpaolo and Camera di commercio di Torino.

January 2014

BASF course: **Technology of concrete - XXII Edition**, Treviso, Italy.

April 2010

*fib* course: **Design of prestressed concrete bridges**, Tel Aviv, Israel.

September 2009.

Rose-School course: **Seismic design of bridges**, Pavia, Italy.

April 2008.

*fib* Course: **Prestressed concrete bridges – materials, technologies and design**, Zagreb, Croatia.

January 2008.

## **Institutional Offices**

Gabriele Bertagnoli is the Dean for the Academic Internships program and in Civil Engineering since June 2014 and Civil Engineering TRAINEESHIP ERASMUS+ Referent since January 2020.

## **Ph.D. Theses Supervisor**

Gabriele Bertagnoli is or has been supervisor of 3 Ph.D. theses in Structural Engineering:

1. Gino D.; "Reliability-based evaluation of bond strength for tensed lapped joints and anchorages in reinforced concrete structures"; Dottarato in Ingegneria delle Strutture del Politecnico di Torino, XXXI Ciclo.  
2015-2018

2. Malavisi M.; "Innovative Structural Health Monitoring Techniques for Civil Infrastructures"; Dottorato in Ingegneria Civile ed Ambientale del Politecnico di Torino, XXXII Ciclo.  
2016-2019
3. Anerdi C.; "Large-scale oriented use of concrete for a wave energy converter: dynamic interaction and structural feasibility"; Dottorato in Ingegneria Civile e Ambientale del Politecnico di Torino, XXXIII Ciclo.  
2017-2021
4. Ferrara M.; Dottorato in Ingegneria Civile e Ambientale del Politecnico di Torino, XXXVII Ciclo.  
From 01-11-2021

## Master Degree Theses Supervisor

Gabriele Bertagnoli has been supervisor of 88 Master Degree theses in Civil or Building Engineering and Architecture:

### 2022

1. Studio di sistema di rinforzo con piastre in acciaio per selle Gerber di travi in c.a. e c.a.p. / Simone Lustrato; rel. Bertagnoli G., Torino 19/07/2022.
2. Valutazione idoneità di un sistema SHM ad inclinometri nell'identificazione di potenziali danneggiamenti nei ponti a graticcio precompressi / Antonio d'Amico; rel. Bertagnoli G., Torino 19/07/2022.
3. Studio trasporto e sollevamento conci del ponte di Braila / Roberto Giovarruscio; rel. Bertagnoli G., Torino 29/04/2022.

### 2021

4. Analisi modale per il monitoraggio della struttura "Viadotto Settefonti" / Sanino Mattia; rel. Giordano L., Bertagnoli G. 14/12/2021.
5. Monitoraggio strutturale con accelerometri Analisi dei segnali con algoritmi su software Python / Marra Ruggiero; rel. Bertagnoli G., Torino 28/10/2021
6. Analisi funzionale delle Linee Guida per la valutazione della sicurezza dei ponti esistenti, confronto con procedure analoghe, introduzione di metodologie avanzate di ispezione e implementazione UML / Scarpato Francesco; rel. Bertagnoli G., Castagnone A., Torino 22/07/2021.
7. Modellazione non lineare di un sensore capacitivo / Emiliano Ciccone; rel. Bertagnoli G., Torino 22/07/2021.
8. Monitoraggio strutturale con accelerometri / Ferrara, Mario; rel. Bertagnoli G., Cigada A., Torino 24/03/2021.
9. Studio dell'efficacia di un sistema di monitoraggio ad inclinometri per il rilievo di danni di impalcati a graticcio precompressi / Spedicato Andrea; rel. Bertagnoli G., Torino 24/03/2021.

### 2020

10. Modellazione non lineare di un impalcato da ponte a graticcio soggetto a danneggiamento / Fratarcangeli, Diego, Torino 15/12/2020.
11. Study of a lightweight structure in the mountains with two different structural materials through the Building Information modelling / Kather Matthias; rel. Bertagnoli G. 27/10/2020.
12. Analisi di vulnerabilità sismica dello Stadio Olimpico di Torino / Loperte Loretta; rel. Bertagnoli G., Di Trapani F., Torino 26/10/2020.

13. Software Python per la verifica di impalcati a graticcio precompressi / Di Naro Giuseppe; rel. Bertagnoli G. 23/07/2020
14. Monitoraggio di impalcati da ponte a graticcio con inclinometri / Franco Thomas; rel. Bertagnoli G. 23/07/2020.
15. Software FEM per il monitoraggio strutturale di ponti a graticcio / Gandolfo, Luciano; rel. Bertagnoli G., Torino 25/03/2020.
16. Monitoraggio strutturale di un viadotto in calcestruzzo armato tramite inclinometri: analisi dei dati con un algoritmo scritto in Python / Antognelli, Cecilia; rel. Bertagnoli G., Torino 25/03/2020.

## 2019

17. Studio dei viadotti Generale Franco Romano e Sabbione dell'Autostrada A6 Torino-Savona / Moreno Stellini; rel. Bertagnoli G., Torino 16/12/2019.
18. Analisi della fessurazione di strutture in cemento armato soggette a stati piani di tensione / Francesco Busso; rel. Bertagnoli G., Giordano L., Torino 21/10/2019.
19. Analisi del comportamento strutturale di una pila da ponte a sezione scatolare soggetta a corrosione / Dario Agudelo Porras; rel. Di Trapani F, Bertagnoli G., Torino; 26/07/2019.
20. Valutazione del coefficiente parziale di sicurezza per l'incertezza di modello in analisi non lineari agli elementi finiti di strutture in cemento armato soggette a caricamento ciclico / Alessandro Dorato; rel. Castaldo P., Bertagnoli G., Gino D., Torino; 26/07/2019.
21. Analysis of vertical vibrations induced by vehicular traffic on bridge decks made of UHSC (Ultra high strength concrete) for the purpose of comfort for pedestrian traffic. Comparison between numerical models and experimentation on real bridges / Bruno Reuben Bradley Pompei; rel. Bertagnoli G., Torino; 26/07/2019.
22. Ponte in travata metallica a C a via inferiore / Teodor Stefa; rel. Bertagnoli G., Torino; 26/07/2019.
23. Taratura ed applicazione di un algoritmo genetico mediante modelli numerici, per la determinazione delle spinte del terreno sul rivestimento di gallerie / Giuseppe Cortese; rel. Bertagnoli G., Barla M., Torino; 26/07/2019
24. Verifica di un ponte esistente in calcestruzzo armato precompresso alla luce della metodologia proposta dal fib Bulletin 80 / Simone Cimetta; rel. Bertagnoli G., Castaldo P., Gino D., Torino 17/04/2019.
25. Modellazione fem di una diga ad arco in calcestruzzo al fine del monitoraggio strutturale / Luciano Stivala; rel. Bertagnoli G., Torino 17/04/2019.
26. Numerical Modelling and Model Updating Based on Experimental Modal Parameters of Ceira Viaduct / Fabio Lucchetta, rel. Bertagnoli G., Torino 17/04/2019.
27. Fessurazione discreta di tiranti in c.a. soggetti a deformazioni impresse / Giovanni Ferraina, rel. Bertagnoli G., Torino 17/04/2018.

## 2018

28. Analisi strutturale e verifica delle strutture originali dello Stadio Olimpico di Torino / Andrea Brancatelli; rel. Bertagnoli G., Torino 07/12/2018
29. Monitoraggio strutturale dinamico di un ponte in c.a.: analisi delle vibrazioni di cavi da precompressione esterna con tecniche di operational modal analysis / Monica Longo; rel. Bertagnoli G., Malavisi M., Torino 07/12/2018
30. Algoritmi genetici per la valutazione delle spinte del terreno su rivestimenti di gallerie a partire da risultati di sistemi di monitoraggio / Francesco Marino; rel. Bertagnoli G., Torino 07/12/2018.
31. La Montagna abitata. Progetto di rifunionalizzazione del complesso Helicoide a Caracas, Venezuela / Erika Josefina Franco Gonzales; rel. Ocelli C., Palma R., Bertagnoli G., Torino 25/07/2018.
32. Assessment of aleatory and model uncertainties for non-linear analysis of slender reinforced concrete members / Michele Viridis; rel. Bertagnoli G., Castaldo P., Gino D., Torino 18/07/2018.



33. Analisi degli effetti delle fasi costruttive e della precompressione sul comportamento a fatica di impalcati da ponte a struttura mista acciaio-calcestruzzo / Massimo Bettiga; rel. Bertagnoli G., Torino 27/03/2018.
34. Numerical models of punching shear of reinforced slabs without shear reinforcement / Benedetto La Fauci; rel. . Bertagnoli G., Torino 27/03/2018.

## 2017

35. Studio di un prototipo di sensore di pressione innovativo per strutture in cemento armato / Angelo Falletta; rel. Gabriele Bertagnoli, Marzia Malavisi, Torino 01/12/2017.
36. Instabilità di profili sottili in acciaio: confronto tra f.e.m. e f.s.m. / Barriga Baquero José Ignacio; rel. Luca Giordano, Gabriele Bertagnoli, Torino 01/12/2017.
37. Analysis of stage construction and external prestressing effects on composite bridge / Andrea Coronati; rel. Gabriele Bertagnoli, Torino 01/12/2017.
38. Edifici multipiano con struttura in legno, progettazione di un caso studio in accordo alla normativa tecnica europea / Francesco Calò; rel. Gabriele Bertagnoli, Torino 12/10/2017.
39. Prestazioni sismiche di ponti a travata isolati con FPS / Pasquale Carratta; rel. Paolo Castaldo, Gabriele Bertagnoli, Torino 12/10/2017.
40. Sensori MEMS applicati al monitoraggio strutturale: trattamento e analisi dei dati / Domenico De Lorenzo; rel. Gabriele Bertagnoli, Marzia Malavisi, Torino 12/10/2017.
41. Numerical Methods for cold-formed steel members design / Luca Di Federico; rel. Luca Giordano, Gabriele Bertagnoli, Torino 12/10/2017.
42. Ponti misti acciaio calcestruzzo: confronto tra diversi sistemi costruttivi / Cesare La Ferla; rel. Luca Giordano, Gabriele Bertagnoli, Torino 17/07/2017.
43. Il BIM per le infrastrutture – Modellazione e analisi strutturale secondo metodologia BIM del viadotto “Pica” S.S. 372 – Telesina / Giuseppe Di Caprio; rel. Anna Osello, Gabriele Bertagnoli, Francesco Semeraro, Torino 16/03/2017.
44. Effetti della precompressione sugli impalcati dei ponti misti acciaio - calcestruzzo / Dario Granatiero; rel. Gabriele Bertagnoli, Torino 16/03/2017
45. Modellazione numerica, prototipazione e testing di un isolatore sismico realizzato dal riciclo di PFU. / Stefano Greco; rel. Chiaia B., Bertagnoli G., Torino 16/03/2017

## 2016

46. Analisi degli effetti di viscosità e ritiro nel nuovo palasport dell'Aquila / Oliviero Cabitza; rel. Gabriele Bertagnoli, Manzone Fabio, Torino; 29/11/2016
47. Lateral-torsional buckling, study of the restraint conditions influence / Luca Odoguardi; rel. Gabriele Bertagnoli, J. Francois Giorgin, Torino; 13/10/2016
48. Effetti della variabilità spaziale e temporale dell'azione combinata di vento e pioggia sulle vibrazioni di stralli da ponte / Luca Pulpo; rel. Gabriele Bertagnoli, Torino; 13/10/2016.
49. Design of an Under-deck cable stayed bridge with composite section / Eleonora Paravano; rel. Gabriele Bertagnoli, Torino; 27/07/2016
50. Studio, analisi e monitoraggio di un ponte ferroviario ad arco in pietra sulla linea Torino-Modane / Davide Tuzi; rel. Giuseppe Ferro, Gabriele Bertagnoli, Torino; 27/07/2016
51. Sviluppo dei sensori per il monitoraggio strutturale di opere in calcestruzzo / Vincenzo Piras; rel. Giuseppe Mancini, Gabriele Bertagnoli, Francesco Tondolo, Torino; 27/07/2016
52. Experimental study of innovative devices for Structural Health Monitoring / Giovanni Anglani; rel. Giuseppe Mancini, Gabriele Bertagnoli, Francesco Tondolo, Torino; 15/03/2016

## 2015

53. Self restrained cracking in reinforced concrete elements / Costanza Anerdi; rel. Gabriele Bertagnoli, Torino; 2015
54. Comportamento allo S.L.E. e allo S.L.U. di sezioni in c.a.p. realizzate per fasi. / Alessio Manzo; rel. Luca Giordano, Gabriele Bertagnoli, Torino; 01/12/2015

55. Soluzioni di minimo peso per ponti in struttura composita acciaio-calcestruzzo / Simone Parise; rel. Luca Giordano, Gabriele Bertagnoli, Torino; 01/12/2015
56. Progetto di un Centro Agroalimentare per la città di Asti / Andrea Tomasello; rel. Paolo Piantanida, Gabriele Bertagnoli, Torino; 27/10/2015
57. Studio dell'intervento di adeguamento del viadotto Mondalavia, in carreggiata nord, dell'Autostrada A6, Torino Savona / Luca Givonetti; rel. Luca Giordano, Gabriele Bertagnoli, Torino; 13/10/2015
58. Dalle miniere al mare tra ferrovie e ciclostrade: progetto di un bicigrill nell'area estrattiva della Sardegna sud-occidentale / Fabio Calleda, Alice Sotgiu; rel. Riccardo Palma, Chiara Maria Occelli, Gabriele Bertagnoli, Torino; 22/07/2015
59. Progetto strutturale di un viadotto in acciaio e calcestruzzo da realizzare nel nuovo itinerario della strada statale 597 Sassari-Olbia / Ettore Di Maria; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 17/03/2015
60. Effetto degli stati di coazione endogeni su ponti a struttura mista / Diego Gino; rel. G. Bertagnoli, G. Mancini, Torino; 21/07/2015

## 2014

61. Ponte ad arco a via inferiore con soletta prefabbricata / Raphael Palombaro; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 02/12/2014
62. Fenomeni di instabilità dell'anima di travi da ponte a struttura mista acciaio-calcestruzzo / Davide Boasso; rel. Gabriele Bertagnoli, Luca Giordano, Torino 14/03/2014
63. Vibrazioni indotte negli stralli da ponte da fenomeni di vento e pioggia / Dario La Mazza; rel. Giuseppe Mancini, Gabriele Bertagnoli, Antonino Recupero, Torino; 14/03/2014
64. Studio preliminare per il recupero e l'adeguamento strutturale dei fabbricati nell'area ex-INCET / Simone Michelis; rel. Gabriele Bertagnoli, Torino; 18/03/2014
65. Ampliamento della linea 5 della metropolitana di São Paulo, Brasile: analisi e verifica della struttura in acciaio dell'edificio "A-Oficina de trens" lotto 8 "Pátio Guido Caloi": l'esperienza di tirocinio presso il Consorzio GEODATA s.p.a.; correl. Vitor Levy Castex Aly / Walter Criscolo; rel. Gabriele Bertagnoli, Marco Gerace, Torino; 18/03/2014
66. Analisi non lineare di strutture piane in c.a. con codici di calcolo commerciali / Stefano D'Angelo; rel. Giuseppe Mancini, Gabriele Bertagnoli, Diego Lorenzo Allaix, Torino; 02/12/2014
67. Progetto di un edificio residenziale con struttura XLAM / Sara Picotto; rel. Gabriele Bertagnoli, Torino; 18/03/2014
68. Progettazione di una passerella pedonale sospesa. Design of a suspension footbridge / Luca Petronelli; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino ; 16/07/2014

## 2013

69. Progetto strutturale di un capannone di una vineria / Caterina Penna; rel. Gabriele Bertagnoli, Torino; 10/12/2013
70. Sistema solare per il processo cartario / Giorgio Salza; rel. Stefano Mauro, Gabriele Bertagnoli, Giuliana Mattiazzo, Ermanno Giorcelli, Torino; 19/03/2013

## 2012

71. Life cycle assessment di una struttura industriale comparando differenti soluzioni costruttive / Giorgio Clerici; rel. Gabriele Bertagnoli, Torino; 27/11/2012
72. Dominio di resistenza per stati di tensione piana nel cemento armato - Failure surface for plane stress states in reinforced concrete / Davide Ferrero; rel. G. Bertagnoli, L. Giordano, Torino; 2012
73. Isolamento sismico di un viadotto stradale con pendolo a scorrimento / Gnan Sabrina; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2012
74. Progetto di un ponte strallato sul torrente Scrivia / Anna Porro; rel. G. Mancini, G. Bertagnoli, Torino; 27/11/2012

75. Modellazione numerica di strutture piane in c.a. con codici di calcolo commerciali: confronto con risultati sperimentali e analisi delle criticità / Paolo Caffaro; rel. Giuseppe Mancini, Gabriele Bertagnoli, Diego Lorenzo Allaix, Torino; 27/11/2012
76. Le strutture composte acciaio-calcestruzzo / Leonardo Isgrò; rel. Vincenzo Ilario Carbone, Mauro Somnavilla, Gabriele Bertagnoli, Torino; 2012
77. Ottimizzazione dei portali rigidi monopiano in acciaio: calcolo plastico a rottura e approccio ingegneristico al fuoco / Ivan Longis; rel. Vincenzo Ilario Carbone, Mauro Somnavilla, Gabriele Bertagnoli, Torino; 2012
78. Effetti degli stati di coazione endogeni sulle strutture miste / Matteo Pavese; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2012
79. Ponte ad arco sul torrente Maira / Matteo Cherasco; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2012

## 2011

80. Dimensionamento e verifica di fondazioni superficiali / Antonella Ricaldone; rel. Claudio Scavia, Gabriele Bertagnoli, Torino; 2011

## 2010

81. Effetti della precompressione esterna su impalcati da ponte misti acciaio-calcestruzzo / Dino Squizzato; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2010
82. Progetto di ponte estradossato a struttura mista / Walter Gramaglia; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2010
83. Ponte strallato curvo / Andrea Gillio; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2010
84. Analysis of external tendons failures in prestressed bridges using the Finite Element Program SOFiSTiK / Kreshnik Shanaj; rel. Giuseppe Mancini, Gabriele Bertagnoli, L. Stempniewski, S. Siegel, Torino; 2010

## 2009 and before

85. Effetti trasversali nei ponti a cassone / Antonio De Leo; rel. Giuseppe Mancini, Gabriele Bertagnoli, Torino; 2009
86. Analisi dei ponti in dotazione all' Esercito Italiano: applicazione al ponte M.G.B. / Maria La Torre; rel. Giuseppe Mancini, Gabriele Bertagnoli, Gianni Luca Marengo, Torino; 2007
87. Analisi teorico-sperimentale di giunzioni incollate di elementi di legno lamellare / Raffaello Tobia Sorrentino; rel. Roberto Rossetti, Gabriele Bertagnoli, Luigi Tommasini, Torino; 07/03/2006
88. Studio del comportamento a rottura di plinto a pozzetto prefabbricato / Gabriele Garlone; rel. Rossetti Roberto, Gabriele Bertagnoli, Torino; 17/05/2005

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## Civil engineering consultancies

Gabriele Bertagnoli is a civil engineer specialized in structural design with experience in structures and infrastructures construction and maintenance.

January 2001 – Present

### **Structural consultancies for the realization of the movie Fast X**

Structural calculations related to the stunts of the movie Fast and Furious X.

May 2022

### **Course for Ordine degli Ingegneri della provincia di Novara**

Timber structures.

April 2022

### **Realization of the third lane of “Viadotto Ema” of A1 Highway**

Design of construction joints in bridge deck slabs.

May 2021 – July 2021

### **Structural analysis of masonry vaults for Scavino wine Cellars**

Structural analysis and verification of masonry vaults.

April 2021 – May 2021

### **Course for Ordine degli Ingegneri della provincia di Novara**

Structural Health monitoring of existing structures.

October 2020

### **Course for Ordine degli Ingegneri della provincia di Novara**

Actions on structures: a comparison between NTC 2018 and NTC 2008.

June 2019

### **Structural Health Monitoring of Moro viaduct on A14 Bologna Taranto highway**

Structural monitoring of external prestressing tendons of a highway viaduct interested by corrosion.

January 2019 – September 2019

### **Structural Health Monitoring of Roccaprebalza viaduct on A15 Parma La Spezia highway**

Structural monitoring of external prestressing tendons of a highway viaduct interested by corrosion.

September 2017 – December 2018

### **Structural Health Monitoring of Val di Sambro Tunnel on A1 Firenze-Bologna highway**

Structural monitoring of a highway tunnel interested by a landslide.

July 2016 – December 2018

### **Structural Health Monitoring of Sparvo Tunnel on A1 Firenze-Bologna highway**

Structural monitoring of a highway tunnel interested by a landslide.

July 2016 – December 2018

### **Structural Health Monitoring of Viadotto Italia on A3 Napoli – Reggio Calabria highway**

Structural monitoring of a prestressed concrete girder bridge during deck replacement.

February 2016 – April 2016

### **Structural Health Monitoring of Richardette apartments building in Oulx (TO)**

Structural monitoring of a residential building located on a landslide.

October 2015 – April 2018

### **Design of steel rack for motor-car assembly line in FIAT Mirafiori plant**

Design of a steel rack for a new assembly line in a motor car factory.

April 2012 - June 2012

**Course for Ordine dei Geometri provincia di Cuneo**

Technical course on design of timber structures.

October 2011 - March 2012

**Courses for F.lli. Ronco SpA (CN)**

Design of steel structures.

September 2008 - June 2009

**Foundations of the 5th parcel of the MOI Olympic Village in Turin**

Structural design of reinforced concrete foundations and vertical bracing systems for multi-storey buildings.

December 2003 - March 2004

**Multiplex Cinema "Lumiere" in Pianezza (Torino)**

Design and works direction assistance of reinforced concrete structure.

November 2003 - July 2004

**Multi-functional shelter for Alvinu park in Aggius (Sassari)**

Structural steel design.

May 2003 - July 2003

**Entrance hall of "Villa Azzurra" Hospital in Rapallo**

Structural steel design.

February 2003 - April 2003

**Bed elevators tower in Acqui Terme Hospital**

Structural steel design.

September 2002 - December 2002