Antonio Pio Sberna

Curriculum vitæ

Department of Structural, Geotechnical and Building Engineering
Politecnico di Torino
✉ *antonio.sberna@polito.it*
antoniosberna.github.io

PhD student of Civil and Environmental Engineering (Structural Engineering)

Personal information

Place and date of birth	Enna (Italy), February 10, 1994
Language skills	Italian (native), English (fluent)
Citizenship	Italian
Professional qualification	Professional licensed engineer qualified on 2nd national exam 2020 Member of the Engineering Chamber of Enna (Italy) numb. 856

Education

Nov 2020 – present **PhD in Civil and Environmental Engineering**, *Politecnico di Torino*.
Research intererest: *Optimization of seismic retrofitting interventions of non-ductile existing structures.*
Advisors: Prof. Giuseppe Marano and Prof. Fabio Di Trapani

Oct 2017 – Jul 2020 **MS in Civil Engineering**, *Politecnico di Torino*.
Master thesis (in english): *Optimal seismic retrofitting of reinforced concrete buildings by steel-jacketing using a genetic algorithm-based framework*
Advisors: Prof. Fabio Di Trapani and Prof. Giuseppe Marano

Oct 2013 – Apr 2017 **BS in Civil Engineering**, *Università degli studi di Catania*.
Bachelor thesis (in italian): *Influenza dello sforzo normale sul collasso plastico di strutture intelaiate (Effect of axial load on the plastic collapse of frame structures)*
Advisor: Prof. Annalisa Greco

Publications on international journals

1. Di Trapani F., Malavisi M., Marano G.C., **Sberna A.P.**, Greco R. "Optimal seismic retrofitting of reinforced concrete buildings by steel-jacketing". *Engineering Structures*, 2020; 219:110864.
2. Di Trapani F., **Sberna A.P.**, Marano G.C. "A new genetic algorithm-based framework for optimized design of steel-jacketing retrofitting in shear-critical and ductility-critical RC frame structures". *Engineering Structures*, 2021; 246:112684.
3. Di Trapani F., Vizzino A., Tomaselli G., **Sberna A.P.**, Bertagnoli G. "A new empirical formulation for the out-of-plane resistance of infilled reinforced concrete frames without prior in-plane loading". *Engineering Structures*, 2022; 266:114422.
4. Di Trapani F., **Sberna A.P.**, Marano G.C. "AI-based optimization framework for the design of seismic retrofitting of reinforced concrete frame structures based on direct costs and EAL". *Computers and Structures*, 2022; 271:106855.

Conference proceedings

1. Di Trapani F., Malavisi M., Marano G.C., **Sberna A.P.** "Genetic algorithm-based optimization of RC frame structures retrofitting with steel jacketing". *IWSS2020 – 1st Italian Workshop on Shell and Spatial Structures*, web meeting, June 2020
2. Di Trapani F., **Sberna A.P.**, Tomaselli G., Marano G.C. "Cost-based and EAL based optimization algorithms for seismic retrofitting of RC frame structures". *Italian Concrete Days 2020 - Costruire in calcestruzzo realizzazione, ricerca, attualità e prospettive*, web meeting, April 2021.
3. Di Trapani F., **Sberna A.P.**, Marano G.C. "Cost and EAL based optimization for seismic reinforcement of RC structures". *IGF26 - 26th International Conference on Fracture and Structural Integrity*, Turin (Italy), May 2021.
4. **Sberna A.P.**, Di Trapani F., Marano G.C. "Optimization of steel-jacketing retrofitting of shear-critical and ductility-critical RC frame structures by a novel genetic algorithm framework". *COMPDYN 2021 - 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, streamed from Athens (Greece), June 2021.

5. Di Trapani F., **Sberna A.P.**, Marano G.C. "Expected Annual Loss oriented seismic retrofitting optimization of RC frame structures using a new AI-based framework". *COMPDYN 2021 - 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, streamed from Athens (Greece), June 2021.
6. Di Trapani F., Tomaselli G., **Sberna A.P.**, Rosso M.M., Marano G.C., Cavaleri L., Bertagnoli G. "Dynamic response of infilled frames subject to accidental column losses". *EUROSTRUCT 2021 – 1st Conference of the European Association on Quality Control of Bridges and Structures*, Padua (Italy), September 2021.
7. **Sberna A.P.**, Di Trapani F., Marano G.C. "A novel framework based on Expected Annual Loss for optimizing seismic retrofitting in reinforced concrete structures". *2nd fib Symposium on Concrete and Concrete Structures*, Rome (Italy), November 2021.
8. **Sberna A.P.**, Di Trapani F., Marano G.C. "A novel framework based on Expected Annual Loss for optimizing seismic retrofitting in reinforced concrete structures". *2nd fib Symposium on Concrete and Concrete Structures*, Rome (Italy), November 2021.
9. Di Trapani F., **Sberna A.P.**, Marano G.C. "Genetic algorithm-based optimization procedure for the seismic retrofitting of existing masonry structures". *14th International Conference on Computational Structures Technology*, Montpellier (France), August 2022.
10. Di Trapani F., **Sberna A.P.**, Demartino C., Marano G.C. "Genetic algorithm-based seismic retrofitting optimization for existing masonry structures". *3rd European Conference on Earthquake Engineering and Seismology*, Bucharest (Romania), September 2022.
11. **Sberna A.P.**, Di Trapani F., Marano G.C. "A new genetic algorithm framework based on Expected Annual Loss for optimizing seismic retrofitting in reinforced concrete frame structures". *19th ANIDIS Conference - Seismic Engineering in Italy*, Turin (Italy), September 2022.
12. Di Trapani F. ,**Sberna A.P.**, Marano G.C. "A novel genetic algorithm-based optimization framework for minimizing seismic retrofitting interventions costs in existing masonry structures". *19th ANIDIS Conference - Seismic Engineering in Italy*, Turin (Italy), September 2022.

Speaker in congresses, conferences and courses

Jun 2021 COMPDYN 2021 – 8$^{\text{th}}$ International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, streamed from Athens (Greece), 28$^{\text{th}}$ - 30$^{\text{th}}$ June 2021

Jul 2021 6th International course on Seismic Analysis of Structures using OpenSees (as tutor), University of Palermo (Italy), 19th - 22nd July 2021.

Nov 2021 2nd FIB Symposium on Concrete and Concrete Structures, Rome (Italy), 18th–19th November 2021.

Jul 2022 OpenSees Days Eurasia - 2nd Eurasian Conference on OpenSees, Turin (Italy), 7th – 8th July 2022.

Aug 2022 14th International Conference on Computational Structures Technology, Montpellier (France), 23rd – 25th August 2022.

Sep 2022 3rd European Conference on Earthquake Engineering and Seismology, Bucharest (Romania), 4th – 9th September 2022.

Sep 2022 19th Italian Conference on Earthquake Engineering, Turin (Italy), 11th – 15th September 2022.

Teaching activities

2020 -2021 (spring) Teaching assistance, *Safety assessment and retrofitting of existing structures and infrastructures* (in english), graduate class - School of Engineering, Politecnico di Torino (Italy)

Scientific and organizing committee of international conferences and courses

- Scientific and organizing committee of *7th international course on "Seismic analysis of Structures using OpenSees"* - Politecnico di Torino (Italy), 5th - 6th July 2022.
- Organizing committee of *"OpenSees Days Eurasia" - 2nd Eurasian Conference on OpenSees* - Turin (Italy), 7th - 8th July 2022.

Book Chapters

- Di Trapani F., Metodi di Analisi strutturale: Sistemi di travi e telai piani. CLUT Editore, Torino 2022. ISBN: 9788879924894

References

Prof. Fabio Di Trapani, PhD
Department of Structural, Building and Geotechnical Engineering
Politecnico di Torino, Turin (Italy)
fabio.ditrapani@polito.it

Prof. Giuseppe C. Marano, PhD
Department of Structural, Building and Geotechnical Engineering
Politecnico di Torino, Turin (Italy)
giuseppe.marano@polito.it

Turin, 15th October 2022 *Antonio P. Sberna*