

# Antonio Pio Sberna

## Curriculum vitæ

Department of Structural, Geotechnical  
and Building Engineering  
*Politecnico di Torino*  
✉ [antonio.sberna@polito.it](mailto:antonio.sberna@polito.it)  
📄 [antoniosberna.github.io](https://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 2<sup>nd</sup> 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 interest: *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.
5. Di Trapani F., **Sberna A.P.**, Di Benedetto M., Villar S., Demartino C., Marano G.C. "Dynamic progressive collapse response of multi-storey frame structures with masonry infills". *Structures*, 2023; 54:1336-1349.

---

## 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 – 1<sup>st</sup> 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 - 26<sup>th</sup> 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". *COMPADYN 2021 - 8<sup>th</sup> 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”. *COMPADYN 2021 - 8<sup>th</sup> 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 – 1<sup>st</sup> 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”. *2<sup>nd</sup> 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”. *2<sup>nd</sup> 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”. *14<sup>th</sup> 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”. *3<sup>rd</sup> 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”. *19<sup>th</sup> 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”. *19<sup>th</sup> ANIDIS Conference - Seismic Engineering in Italy*, Turin (Italy), September 2022.
13. Di Trapani F., Bogatkina V., Di Benedetto M., **Sberna A.P.**, Petracca M., Camata G. “Simplified Evaluation of the Additional Shear Demand Due to Masonry Infills”. *2<sup>nd</sup> Eurasian Conference on OpenSees Days, EOSD 2022* Turin (Italy), July 2022. Published in *Lecture Notes in Civil Engineering*, 2023, 326:1-132023

---

## Speaker in congresses, conferences and courses

- Jun 2021 COMPDYN 2021 – 8<sup>th</sup> International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, streamed from Athens (Greece), 28<sup>th</sup> - 30<sup>th</sup> June 2021
- Jul 2021 6<sup>th</sup> International course on Seismic Analysis of Structures using OpenSees (as tutor), University of Palermo (Italy), 19<sup>th</sup> - 22<sup>nd</sup> July 2021.
- Nov 2021 2<sup>nd</sup> FIB Symposium on Concrete and Concrete Structures, Rome (Italy), 18<sup>th</sup>–19<sup>th</sup> November 2021.
- Jul 2022 OpenSees Days Eurasia - 2<sup>nd</sup> Eurasian Conference on OpenSees, Turin (Italy), 7<sup>th</sup> – 8<sup>th</sup> July 2022.
- Aug 2022 14<sup>th</sup> International Conference on Computational Structures Technology, Montpellier (France), 23<sup>rd</sup> – 25<sup>th</sup> August 2022.
- Sep 2022 3<sup>rd</sup> European Conference on Earthquake Engineering and Seismology, Bucharest (Romania), 4<sup>th</sup> – 9<sup>th</sup> September 2022.
- Sep 2022 19<sup>th</sup> Italian Conference on Earthquake Engineering, Turin (Italy), 11<sup>th</sup> – 15<sup>th</sup> 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 7<sup>th</sup> international course on "*Seismic analysis of Structures using OpenSees*" - Politecnico di Torino (Italy), 5<sup>th</sup> - 6<sup>th</sup> July 2022.
- Scientific and organizing committee of "*OpenSees Days Eurasia*" - 2<sup>nd</sup> Eurasian Conference on OpenSees - Turin (Italy), 7<sup>th</sup> - 8<sup>th</sup> July 2022.

---

## Book Chapters

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

---

## Journal Reviewer

- Advances in Structural Engineering (Hindawi). ISSN: 1687-8086

---

## 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, 15<sup>th</sup> July 2023

*Antonio P. Sberna*