Alan Poulos

Update: September, 2021

Education

2019–Present **Ph.D. in Structural Engineering**, *Stanford University*, USA.

2013–2014 **M.Sc. in Structural Engineering**, *Pontificia Universidad Católica de Chile*, Chile.
Advisors: Juan Carlos de la Llera, Judith Mitrani-Reiser
Visiting student at Johns Hopkins University (2 months)

2008–2013 **Civil Engineer**, *Pontificia Universidad Católica de Chile*, Chile.

Experience

2017–2019 **Research engineer**, *Sirve S.A.*, Chile, Research & Development.
Development of seismic hazard and risk assessment tools for buildings.

2014–2017 **Research assistant**, *Research Center for Integrated Disaster Risk Management (CIGIDEN)*, Chile.
Research in seismic hazard and risk assessment of single structures and spatially distributed infrastructure.

2013–2013 **Intern**, *Sirve S.A.*, Chile, (2 months).
Design of seismic isolation systems for hospitals and residential buildings.

2009–2013 **Teaching assistant**, *Pontificia Universidad Católica de Chile*, Chile.
Courses: Calculus I, Calculus II, Calculus III, Mathematical Methods Applied to Engineering, Statics, Hydraulic Engineering, Solid Mechanics, Structural Analysis I, Structural Analysis II, Earthquake Engineering, and Seismic Protection Systems.

Awards

2021 **EERI/FEMA NEHRP Graduate Fellowship**, *Earthquake Engineering Research Institute*.

2020, 2021 **Nancy Grant Chamberlain Fellowship**, *Stanford University*.

2019 **Beca Chile**, *National Agency for Research and Development (ANID)*.

2014 **Marcos Orrego Puelma Award**, *Institute of Engineers of Chile*.

2013 **Department of Structural and Geotechnical Engineering Award**, *Pontificia Universidad Católica de Chile*.

Skills

Languages Native English and Spanish speaker

Programming Python, Matlab, C++

Professional Service

Journal Reviewer Physica A: Statistical Mechanics and its Applications, Travel Behaviour and Society, International Journal of Disaster Risk Reduction.

Professional Membership

2020-Present Earthquake Engineering Research Institute (EERI).

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Journal Publications

[1] **Poulos, A.**, Miranda, E., & Baker, J. W. (in press). Evaluation of earthquake response spectra directionality using stochastic simulations. *Bulletin of the Seismological Society of America*.

[2] **Poulos, A.**, & Miranda, E. (2021). Proposal of orientation-independent measure of intensity for earthquake-resistant design. *Earthquake Spectra*. Advanced online publication. doi:10.1177/87552930211038240

[3] **Poulos, A.**, & Miranda, E. (2021). Relations between MaxRotD50 and some horizontal components of ground motion intensity used in practice. *Bulletin of the Seismological Society of America*, 111(4), 2167-2176. doi:10.1785/0120200364

[4] Allen, E., Chamorro, A., **Poulos, A.**, Castro, S., de la Llera, J. C., Echaveguren, T. (2021). Sensitivity analysis and uncertainty quantification of a seismic risk model for road networks. *Computer-Aided Civil and Infrastructure Engineering*. Advanced online publication. doi:10.1111/mice.12748

[5] Ferrario, E., **Poulos, A.**, Castro, S., de la Llera, J. C., & Lorca, A. (in press). Predictive capacity of topological measures in evaluating seismic risk and resilience of electric power networks. *Reliability Engineering & System Safety*

[6] Espinoza, S., **Poulos, A.**, Rudnick, H., de la Llera, J. C., Panteli, M., & Mancarella, P. (2020). Risk and resilience assessment with component criticality ranking of electric power systems subject to earthquakes. *IEEE Systems Journal*, 14(2), 2837-2848. doi:10.1109/JSYST.2019.2961356

[7] Olivares, C., **Poulos, A.**, & de la Llera, J. C. (2020). Torsion control in structures isolated with the triple friction pendulum system. *Engineering Structures*, 216, 110503. doi:10.1016/j.engstruct.2020.110503

[8] Candia, G., **Poulos, A.**, de la Llera, J. C., Crempien, J., & Macedo, J. (2020). Correlations of spectral accelerations in the Chilean subduction zone. *Earthquake Spectra*, 36(2), 788-805. doi:10.1177/8755293019891723

[9] **Poulos, A.**, Monsalve, M., Zamora, N., & de la Llera, J. C. (2019). An updated recurrence model for Chilean subduction seismicity and statistical validation of its Poisson nature. *Bulletin of the Seismological Society of America*, 109(1), 66-74. doi:10.1785/0120170160

[10] Yang, S., Mavroeidis, G. P., de la Llera, J. C., **Poulos, A.**, Aguirre, P., Rahpeyma, S., Sonnemann, T., & Halldorsson, B. (2019). Empirical site classification of seismological stations in Chile using horizontal-to-vertical spectral ratios determined from recordings of large subduction-zone earthquakes. *Soil Dynamics and Earthquake Engineering*, 125. doi:10.1016/j.soildyn.2019.05.017

[11] Favier, P., **Poulos, A.**, Vásquez, J., Aguirre, P., & de la Llera, J. C. (2019). Seismic risk assessment of an emergency department of a Chilean hospital using a patient-oriented performance model. *Earthquake Spectra*, 35(2), 489-512. doi:10.1193/103017EQS224M

[12] Castro, S., **Poulos, A.**, Herrera, J. C., & de la Llera, J. C. (2019). Modeling the impact of earthquake induced debris on tsunami evacuation times of coastal cities. *Earthquake Spectra*, 35(1), 137-158. doi:10.1193/101917EQS218M

[13] **Poulos, A.**, Tocornal, F., de la Llera, J. C., & Mitrani-Reiser, J. (2018). Validation of an agent-based building evacuation model with a school drill. *Transportation Research Part C: Emerging Technologies*, 97, 82-95. doi:10.1016/j.trc.2018.10.010

[14] **Poulos, A.**, de la Llera, J. C., & Mitrani-Reiser, J. (2017). Earthquake risk assessment of buildings accounting for human evacuation. *Earthquake Engineering & Structural Dynamics*, 46(4), 561-583. doi:10.1002/eqe.2803

Conference Publications

* denotes author who presented at the conference.

[1] Monsalve, M.*, Ferrario, E., Alberto, Y., Arróspide, F., Castro, S., **Poulos, A.**, & de la Llera, J.C. (2020, November). Evaluating network reduction strategies for consistent risk assessment of critical infrastructures. In *Proceedings of the 30th European Safety and Reliability Conference*, Venice, Italy. doi:10.3850/978-981-14-8593-0_5115-cd

[2] Ferrario, E.*, Monsalve, M., **Poulos, A.**, de la Llera, J.C., & Sansavini, G. (2020, November). Representation and modeling of the Chilean electric power network for seismic resilience analysis. In *Proceedings of the 30th European Safety and Reliability Conference*, Venice, Italy. doi:10.3850/978-981-14-8593-0_5107-cd

[3] Ferrario, E.*, **Poulos, A.**, de la Llera, J.C., Lorca, A., Oneto, A., & Magnere, C. (2019, September). Representation and modeling of the Chilean electric power network for seismic resilience analysis. In *Proceedings of the 29th European Safety and Reliability Conference*, Hannover, Germany. doi:10.3850/978-981-11-2724-3_0558-cd

[4] Castro, S.*, **Poulos, A.**, Urrutia, A., Herrera, J. C., Cienfuegos, R., & de la Llera, J.C. (2018, June). Impact of earthquake magnitude on the estimation of tsunami evacuation casualties. In *Proceedings of the 11th National Conference on Earthquake Engineering*, Los Angeles, CA.

[5] **Poulos, A.**, Monsalve, M., Zamora, N., & de la Llera, J. C.* (2018, June). Statistical assumptions of mainshock sequences and their validity under different magnitude ranges. In *16th European Conference on Earthquake Engineering*, Thessaloniki, Greece.

[6] Espinoza, S.*, **Poulos, A.**, Rudnick, H., de la Llera, J. C., Panteli, M., Mancarella, P., Sacaan, R., Navarro, A., & Moreno, R. (2017, July). Seismic resilience assessment and adaptation of the Northern Chilean power system. In *IEEE Power & Energy Society General Meeting*, Chicago, IL. doi:10.1109/pesgm.2017.8274288

[7] **Poulos, A.***, Espinoza, S., de la Llera, J. C., & Rudnick, H. (2017, January). Seismic risk assessment of spatially distributed electric power systems. In *16th World Conference on Earthquake Engineering*, Santiago, Chile.

[8] **Poulos, A.***, Castro, S., de la Llera, J. C., & Mitrani-Reiser, J. (2017, January). Seismic risk assessment of human evacuation in buildings. In *16th World Conference on Earthquake Engineering*, Santiago, Chile.

[9] Favier, P.*, Rivera, F., **Poulos, A.**, Vásquez J., de la Llera J. C., & Mitrani-Reiser, J. (2017, January). Impact on Chilean hospitals following the 2015 Illapel earthquake. In *16th World Conference on Earthquake Engineering*, Santiago, Chile.

[10] Rivera, F.*, Jünemann, R., Candia, G., Favier, P., Fernández, C., Chacón, M., Hube, M., Chamorro, A., Aguirre, P., de la Llera, J. C., & **Poulos, A.** (2017, January). Reconnaissance observations by CIGIDEN after the 2015 Illapel, Chile earthquake and tsunami. In *16th World Conference on Earthquake Engineering*, Santiago, Chile.

[11] Favier, P.*, **Poulos, A.**, Vásquez J., & de la Llera, J. C. (2016, September). Seismic risk assessment of a hospital's emergency department. In *Proceedings of the 6th International Disaster and Risk Conference: Integrative Risk Management - Towards Resilient Cities* (pp. 199-202), Davos, Switzerland.

[12] **Poulos, A.***, Favier, P., Vásquez J., & de la Llera, J. C. (2015, November). Scenario-based seismic performance assessment of a Chilean hospital. In *Proceedings of the 10th Pacific Conference on Earthquake Engineering*, Sydney, Australia.

[13] de la Llera, J. C.*, Mitrani-Reiser, J., Rivera, F., Fortuño, C., Jünemann, R., **Poulos, A.**, & Vásquez J. (2015, November). The 2010 Chile earthquake: a five-year reflection. In *Proceedings of the 10th Pacific Conference on Earthquake Engineering*, Sydney, Australia.

[14] de la Llera, J. C.*, Vásquez, J., **Poulos, A.**, & Favier, P. (2015, March). Trends in research and design of structures with seismic protection systems. In *11th Chilean Conference of Seismology and Earthquake Engineering*, Santiago, Chile.

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