

LUIS CEFERINO

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PROFESSIONAL ASSOCIATIONS

NEW YORK UNIVERSITY

Assistant Professor
Civil and Urban Engineering Department
Center for Urban Science and Progress

New York, USA
2021 – Present

PRINCETON UNIVERSITY

Distinguished Postdoctoral Fellow at Andlinger Center for Energy and the Environment &
Civil and Environmental Engineering Department
Advisor: Ning Lin

New Jersey, USA
2019 – 2020

EDUCATION

STANFORD UNIVERSITY

PhD Civil and Environmental Engineering
Thesis project: “Effective emergency response policies for hospital systems in the wake of time-varying seismic hazard”
Advisors: A. Kiremidjian and G. Deierlein. *Committee:* J. Baker, J. Mitrani-Raiser, and W. Ellsworth

California, USA
2015 – 2019

STANFORD UNIVERSITY

MS Structural Engineering and Geomechanics

California, USA
2013 – 2014

UNIVERSIDAD NACIONAL DE INGENIERÍA

Bachelor of Science in Civil Engineering
Rank: #1/104
Thesis project: “Evaluation of the effective flange width for low-ductility reinforced concrete (RC) walls through nonlinear, Finite Element Modeling (FEM) verified by experimental tests”
Advisor: C. Zavala

Lima, Peru
2007 – 2011

FUNDING, AWARDS & HONORS

Research Funding:

- C2SMART Funding – Lead PI (\$ 85k) 2022
- NYU Climate Change Seed Funding – Lead PI (\$10k) 2021

Scholarships:

- Distinguished Fellowship at Andlinger Center (\$130k), Princeton University 2019 – 2020
- “John A. Blume” Fellowship, Stanford University 2017 – 2018
- “Shah Family” Fellowship, Stanford University 2015 – 2016
- “Andrés del Castillo” Fellowship, Universidad Nacional de Ingeniería 2013
- PRONABEC Fellowship 2013

Awards:

- EERI Student Grant for the National Conference on Earthquake Engineering (NCEE) 2018

- 2nd place in contest of undergraduate research presentations in National Congress of Civil Engineering Students (CONEIC) in Peru 2013
- 1st place in undergraduate contest of knowledge on Civil Engineering in CONEIC in Peru 2011
- Prize “Manuel Pardo y Lavalle” for top academic performance in Civil Engineering’s undergraduate cohort 2010
- #8/4277 in National University of Engineering’s admission contest 2007

JOURNAL PUBLICATIONS

- [J1] **Ceferino, L.**, Lin, N., & Xi, D. (Preprint). Bayesian Updating of Solar Panel Fragility Curves and Implications of Higher Panel Strength for Solar Generation Resilience. <https://doi.org/10.31224/osf.io/dv7s3>
- [J2] Hariri-Ardebili MA, Sattar S, Johnson K, Clavin C, Fung J, **Ceferino L.** (2022). A Perspective towards Multi-Hazard Resilient Systems: Natural Hazards and Pandemics. *Sustainability*. 14(8):4508.
- [J3] **Ceferino, L.**, Lin, N. & Xi, D. (2022) Stochastic modeling of solar irradiance during hurricanes. *Stoch Environ Res Risk Assess*, 1-13.
- [J4] **Ceferino, L.**, Galvez, P., Ampuero, J.-P., Kiremidjian, A., Deierlein, G., & Villegas-Lanza, J. C. (2021). Bayesian Parameter Estimation for Space and Time Interacting Earthquake Rupture Model Using Historical and Physics-Based Simulated Earthquake Catalogs. *Bulletin of the Seismological Society of America*.
- [J5] Patel, S., **Ceferino, L.**, Liu, C., Kiremidjian, A., & Rajagopal, R. (2021). The disaster resilience value of shared rooftop solar systems in residential communities. *Earthquake Spectra*, June, 1–24.
- [J6] **Ceferino L.**, Mitrani-Reiser J., Kiremidjian A., Deierlein G., Bambarén, Celso (2020). “Effective Plans for Hospital System Response to Earthquake Emergencies”. *Nature Communications*, 11, 4325.
- [J7] **Ceferino, L.**, Kiremidjian, A., and Deierlein, G. (2020). “Probabilistic space- and time-interaction modeling of main-shock earthquake rupture occurrence”. *Bulletin of Seismological Society of America*. 110 (5): 2498-2518.
- [J8] **Ceferino L.**, Kiremidjian A., and Deierlein G. (2018). “Regional Multi-severity Casualty Estimation Due to Building Damage Following a Mw 8.8 Earthquake in Lima, Peru”. *Earthquake Spectra*, 4(3).
- [J9] **Ceferino L.**, Kiremidjian A., and Deierlein G. (2018). “Probabilistic Model for Regional Multi-severity Casualty Estimation due to Building Damage Following Earthquakes. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 4(3), 04018023.
- [J10] Markhvida M., **Ceferino L.**, and Baker J. (2017). “Modeling spatially correlated spectral accelerations at multiple periods using principal component analysis and geostatistics”. *Journal of Earthquake Engineering and Structural Dynamics* 47(5), 1107-1123.
- [J11] Noh H.Y., Kiremidjian A., **Ceferino L.**, and So E. (2017). “Bayesian Updating of Earthquake Vulnerability Functions with Application to Mortality Rates”. *Earthquake Spectra*, Vol. 33, No. 3, pp. 1173-1189.
- [J12] Lallemand D., Burton H., **Ceferino L.**, Bullock Z., and Kiremidjian A. (2017). “A Framework and Case Study for Earthquake Vulnerability Assessment of Incrementally Expanding Buildings”. *Earthquake Spectra*, 33(4).
- [J13] Zavala C., Gibu P., Lavado L., Taira J., Cárdenas L., and **Ceferino L.** (2012). “Cyclic Behavior of Low Ductility Walls Considering Perpendicular Action”. *Journal of Disaster Research*, 8(2), 313.

CONFERENCE PRESENTATIONS

- [C1] **Ceferino, L.**, Lin, N., & Xi, D. (2020). Distributed Energy Resources for Disaster Resilience to Hurricanes in a Changing Climate. In American Geophysical Union Fall Meeting.
- [C2] **Ceferino, L.**, Mitrani-Reiser, J., Kiremidjian, A., Deierlein, G., & Bambarén, C. (2020). Informing Emergency Response of Hospital Systems after Moderate and Large Earthquakes in Lima, Peru. In 17th World Conference on Earthquake Engineering, 6c – 0003, Tokyo, Japan.

- [C3] **Ceferino, L.**, Liu, C., Alisjahbana, I., Patel, S., Sun, T., Kiremidjian, A., & Rajagopal, R. (2020). Earthquake resilience of distributed energy resources. In 17th World Conference on Earthquake Engineering, Tokyo, Japan.
- [C4] Markhvida, M., Cremen, G., Grujic, O., **Ceferino, L.**, & Baker, J. (2020). Methods for Evaluation and Treatment of Epistemic Uncertainty in Portfolio Losses Due to Earthquakes. In 17th World Conference on Earthquake Engineering, 1–10, Tokyo, Japan.
- [C5] **Ceferino L.**, Mitrani-Reiser J., Kiremidjian A., and Deierlein G. (2018). “Computing Hospital System Resilience: A Supply-Demand Perspective”. In 11th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Los Angeles, CA.
- [C6] **Ceferino L.**, Kiremidjian A., and Deierlein G. (2018). “Parameter Estimation Methods for Modeling of Time and Space Interactions of Earthquake Rupture”. In 16th European Conference in Earthquake Engineering, Thessaloniki, Greece.
- [C7] **Ceferino L.**, Kiremidjian A., and Deierlein G. (2017). “Space and time interaction modeling of earthquake rupture occurrence”. In 12th International Conference on Structural Safety & Reliability, Vienna, Austria.
- [C8] **Ceferino L.**, Kiremidjian A., and Deierlein G. (2017). “Framework of the estimation of the health status of the population during an earthquake emergency”. In 16th World Conference on Earthquake Engineering, Santiago de Chile, Chile.
- [C9] Markhvida M., **Ceferino L.**, and Baker J. (2017). “Effect of ground motion correlation on regional seismic loss estimation: application to Lima, Peru using a cross-correlated principal component analysis model”. In 12th International Conference on Structural Safety & Reliability, Vienna, Austria.
- [C10] Zavala C., Gibu P., Lavado L., Taira J., Cardenas L., and **Ceferino L.** (2013). “Low Ductility Concrete Wall Test Considering Perpendicular Wall Action”. In 10th International Conference on Urban Earthquake Engineering, Center for Urban Earthquake Engineering, Tokyo Institute of Technology, pp.599-602, 2013.

ACADEMIC SERVICE AND OUTREACH

JOURNAL REVIEWER

Earthquake Spectra
 International Journal of Disaster Risk Reduction
 Reliability Engineering and System Safety
 Journal of Earthquake Engineering
 Natural Hazards Reviews
 Natural Hazards
 Computers and Structures
 Computers and Operations Research

SCIENTIFIC CONFERENCE SUPPORT

Coordinated and co-moderated two sessions on “Post-Earthquake Response, Emergency Management, And Recovery” and “Risk and Resilience of Distributed Infrastructure and Lifelines” at NCEE in Los Angeles 2018
 Moderated session on “Seismic Analysis” at the ICOSSAR in Vienna, Austria 2017
 Fund-raised and co-organized Techsuyo, the annual meeting for the Peruvian professional community in USA in the areas of science, technology, and innovation, at Stanford University 2017

COMMUNITY OUTREACH

Developed material and taught a three-session interactive lecture on earthquake fundamentals at the Sequoia High School in Redwood City, California 2017
 Conducted a community session on earthquake vulnerability of soft-story houses for critical neighborhoods in Oakland, California, in coordination with the Oakland Chief Resilience Officer 2015

LEADERSHIP POSITIONS

Co-chair of the Public Health Working Group from the EERI Learning from Earthquake's Program	2022-Present
President, Peruvian Student Association, Stanford University	2016-2018
Board Member, EERI Student Chapter, Stanford University	2016
Vice-President, Peruvian Student Association, Stanford University	2015
Student Representative, Board of the Civil Engineering Department, Universidad Nacional de Ingeniería in Peru	2009 – 2010

OTHER TALKS AND MEDIA COVERAGE

“Community Resilience through Microgrids and Solar Generation to Earthquakes and Hurricanes” at the ASCE Lifelines Conference 2021-2022 (link to video)	Feb. 2022
“Earthquake Resilience of Hospital Systems” at the graduate seminar at University College of London	Nov. 2021
“Modern Power System's Resilience” at the Energy, Environment, and Water roundtable on Climate-proofing Infrastructure at University College of London	Nov. 2021
Participation at the United Nations COP26 in Scotland as part of the NYU Official Delegation	Nov. 2021
“Approaches to manage flood risks after Hurricane Ida” in an interview with News 12 Brooklyn	Sep. 2021
“Effective Policies for Hospital Systems during a Hospital Emergency Response”, at UCLA's Graduate Seminar, EERI Annual Meeting and JHU's Healthcare Modeling Workshop	Feb-April. 2021
“ <u>Hospitals can coordinate to save lives after an earthquake</u> ” in Temblor Inc.'s articles	Nov. 2020
“Resilience of Distributed Energy Resources to Earthquakes and Hurricanes”, at UCL, UK.	Nov. 2020
“Disaster Resilience of Hospital Systems and Modern Power Systems”, at University of Delaware, University of Washington, New York University, and Johns Hopkins University.	Nov. 2019 – Mar. 2020
“ <u>A new technique predicts how quakes would affect a city's hospitals</u> ” in Stanford Engineering News	Oct. 2020
“Effective Policies for Hospital System Emergency Response”, at University of Delaware & Princeton University.	May. 2019
“Seismic Resilience of Urban Systems to Earthquakes”, at Universidad Nacional de Ingeniería in Lima, Peru.	Dec. 2018
“Probabilistic Modeling and Parameter Estimation for Earthquake Ruptures with Application to the Subduction Zone in Peru”, at the Instituto Geofísico del Perú, Lima.	Aug. 2018
“Risk Analysis beyond Insurance. Where the Disaster Risk Technologies are Taking us?” at the Understanding Risk Forum organized by the World Bank in Mexico City, Mexico.	Jun. 2018
Featured in the CEO Update Newsletter of the Canterbury District Health Board for research on “Seismic Resilience of Hospital Systems” in New Zealand	Sep. 2017
“April 16, 2016 Mw 7.8 Ecuador Earthquake” at Pacific Earthquake Engineering Research Center at University of California, Berkeley	Jul. 2016
Interviewed by Radio San Borja, in Lima, about seismic risk analysis and performance-based earthquake engineering.	Dec. 2014

Interviewed by the Peruvian Association of Civil Engineers about state-of-the-art research on earthquake engineering in USA.
Aug. 2014

“Experiences about the admission process at North American Universities” at the National University of Engineering in Lima,
Peru. Mar. 2013; Aug., Dec 2014

LANGUAGES

Spanish (native language)

English (second language, TOEFL iBT: 103)