

**Dimitrios G. Lignos, Ph.D.**  
**Associate Researcher**  
**Department of Civil and Environmental**  
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## **Education**

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- 2004-2008 **Stanford University, CA**  
Doctor of Philosophy (**Ph.D.**) in Civil and Environmental Engineering. (CEE)  
Ph.D. Dissertation Topic: “*Sidesway collapse of deteriorating structural systems under seismic excitations*”  
Supervisor: Professor Helmut Krawinkler
- 2003-2004 **Stanford University, CA**  
Master of Science (**MSc**) in Civil and Environmental Engineering. (CEE)  
Advisor: Professor Gregory G. Deierlein **GPA: 4.03/4.00**
- 1998-2003 **National Technical University of Athens (NTUA), Greece**  
**Diploma**, M. Eng. in CEE with specialization in Structural Engineering  
Thesis Topic: “*Advanced nonlinear techniques to investigate the effects of mass and stiffness irregularities on seismic demands of steel moment frames*”  
Supervisor: Professor Charis J. Gantes **GPA: 9.11/10.00**

## **Research Interests**

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Collapse Assessment of Structural Systems  
Experimental Methods in Civil Engineering  
Fracture and Fatigue of Steel Structures  
Retrofit Techniques for Structural Systems  
Performance-Based Design  
Structural Reliability  
Structural Health Monitoring  
Sustainability and Structural Performance  
Structural Performance Databases  
Nonlinear Analysis

## **Appointments**

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- 2008 – present **Postdoctoral Research Associate**, Stanford University, Stanford, CA  
Supervision: Professor S. Billington (Stanford, CA), PI: Professor J. K. Wight (University of Michigan), Co-PIs: Professors G. J. Parra, S. El-Tawil (University of Michigan).
- 2008 – present **Visiting Researcher**, University of California, Berkeley, CA  
Design, plan and execution of state-of-the art hybrid simulation testing of retrofitted steel structures with ductile fiber reinforced concrete, as part of Network for Earthquake Engineering Simulation (NEES), in collaboration with Professors S. Billington, (Stanford, CA), Professor J. K. Wight (University of Michigan), Professor B. Stojadinovic (University of California, Berkeley).

- 2006 – 2007 **Visiting Researcher**, State University at Buffalo, Buffalo, New York (SUNY)  
Planned, designed and conducted two shaking table collapse tests of a scale model of a 4-story steel structure at the NEES facility at University at Buffalo. The objective was to validate that collapse prediction of structural frames is analytically feasible (Conducted more than 120 shaking table tests as part of Network for Earthquake Engineering Simulation (NEES). Supervision: Professor H. Krawinkler, Professor A. Whittaker.
- 2004 – 2008 **Graduate Research Assistant**, Stanford University, Stanford, CA.  
Supervision: Professor H. Krawinkler (Stanford, CA)

## **Honors/Awards**

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- 2009 – 2010 Japan Society for the Promotion of Science (**JSPS**) honorary fellowship to conduct research in Japan in the Disaster Prevention Research Institute (**DPRI**) in Kyoto University and Hyogo Earthquake Engineering Research Center (**E-Defense**) focusing on seismic capacity of high rise buildings.
- 2008 – 2009 National Science Foundation (**NSF**) **Award** for Experimental Research in Earthquake Engineering to participate in a full scale 6-story earthquake test and damage inspection in world’s largest shaking table in Japan (E-Defense, National research institute for earth science and disaster prevent) for developing a performance-based seismic design philosophy for mid-rise wood construction
- 2005 - 2006 John A. Blume **Fellow** for Doctor of Philosophy, Stanford, CA (**First Recipient**)
- 2005 - 2006 **Medal and Award** for exemplary research in the area of earthquake engineering (awarded during 3<sup>rd</sup> conference on Mechanics and Solids, *Massachusetts Institute of Technology*)
- 2005 - 2006 **“John Argyris” Medal and Award** for best Diploma Thesis in the area of Earthquake Engineering from Greek Association of Computational Mechanics (awarded during 5<sup>th</sup> GRACM conference on computational mechanics, Cyprus)
- 2003 - 2004 Stanford University **Fellow** for Master of Science, Stanford, CA
- 2003 - 2004 Fulbright Scholar to pursue graduate studies in United States
- 1998 - 2003 **5 “Distinguished Performance” Awards** from Technical Chamber of Greece (Ranked among the top 3 students of NTUA for 5 consequent years)
- 1999 - 2003 **5 Scholarships** from the Greek Institution of National Scholarships (IKY) (top 1% in a class of 250 students in NTUA for 5 consequent years)
- 1999 - 2000 **6 “Distinguished Performance” Awards** from NTUA for exceptional performance in Mathematics

## **Awarded Research Proposals**

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- 2009 – 2012 **NSF NEESR-CR Proposal 0936633, Award \$1.2Million:** “Collapse Simulation of Multi-Story Buildings through Hybrid Testing”, E. Miranda, **D. G. Lignos**, H. Krawinkler (Stanford University), R. Medina (University of New Hampshire), G. Mosqueda (State University of New York at Buffalo), B. Fell (Sacramento State), *through* George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) Division of Civil, Mechanical, and Manufacturing Innovation Directorate for Engineering Suite 545 National Science Foundation.

## **Research Projects**

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### **Stanford University**

- 2009- present **“ATC-76-6: Development of Simplified Methods for Quantification of Building System Performance Applicable For Engineering Practice”**. The objective of the project is to

- develop simplified methods and models that incorporate shear and flexural behavior of structural systems for quantification of structural performance. The primary goal is to provide to engineering community tools applicable in practice. Worked with Professor H. Krawinkler as part of NEHRP Consultants Joint Venture, NIST-funded Earthquake Structural and Engineering Research Contract-Applied Technology Council.
- 2008- present **“Design, Evaluation and Testing of a Ductile Fiber-Reinforced Concrete Infill Panel System for Seismic Retrofitting of Steel Frames”**. The objective of this NEES-SG project is to evaluate the seismic performance of precast high performance fiber-reinforced concrete infill panels that are easily installed in a bay or number of bays of existing or new steel frames. The new retrofit system has been compared analytically with other standard retrofit systems such as buckling restraint braces and viscous dampers. Work with Professor **Sarah L. Billington**.
- 2008- present **“ATC-76: Quantification of Building System Performance and Response Parameters”**. The objective of this project is to develop building system performance and response parameters ( $R$ ,  $C_d$ ,  $Q_o$ ) for the linear design methods traditionally used in current building codes for special moment resisting frames. Worked with Professor **H. Krawinkler** and Professor **F. Zareian**, as part of NEHRP Consultants Joint Venture, NIST-funded Earthquake Structural and Engineering Research Contract-Applied Technology Council.
- 2008 - 2009 **“ATC-72: Development of Guidelines on Modeling and Acceptance Criteria for Seismic Design and Analysis of Tall Buildings”**. Development of modeling recommendations for steel and reinforced concrete elements in support to collapse assessment of deteriorating structural systems. Worked with Professor **H. Krawinkler**, as part of Applied Technology Council (ATC)-72 project.
- 2006 – 2007 **“Collapse Predictions of a Shaking Table Collapse Test of a Full Scale 4-Story Steel Structure”**. Analytical modeling development and collapse predictions for a three dimensional shaking table collapse test of a full scale 4-story steel structure conducted on the E-Defense shaking table in the Hyogo Earthquake Engineering Research Center in Japan. Worked with Professors **H. Krawinkler** and **F. Zareian**.
- 2006 – 2007 **“Cyclic and Monotonic Component Tests for Deterioration Modeling”**. Planned designed and conducted more than 50 cyclic and monotonic component tests at the John A. Blume Earthquake laboratory at Stanford University in order to investigate under the effect of cyclic and monotonic loading on component deterioration and validate analytical models. Worked with Professor **H. Krawinkler**.
- 2006 – 2007 **“Fragility Assessment of Reduced Beam Section Moment Connections”**. Developed damage states (Yielding, Local Buckling and Fracture) to evaluate cyclic response of reduced beam section steel moment connections. Worked with Professor **E. Miranda**.
- 2005 – 2007 **“CUREE-KAJIMA: Contributions to Collapse Prediction for Frame Structures”**. Worked on the investigation of factors leading to progressive collapse of structural systems under earthquake excitations. Worked with Professor **H. Krawinkler** and **Kajima Corporations** as part of the CUREE-Kajima Joint Research Program, Phase VI)
- 2005 – 2007 **“Development of Databases for Deterioration Modeling of Structural Components”**. Designed and developed three databases for steel structural members, reinforced concrete members and tubular steel sections. More than 600 specimens were collected and input in the databases. The focus was the development of relationships to model deterioration of components in support to collapse assessment of structural systems. All three structural component databases will be posted online by NEES and will be available to public (worked with Professor **H. Krawinkler**, **Kajima Corporation** CUREE Joint Research Program, Phase VI also collaborated with Professors **M. Nakashima**, **M. Fardis**, **C. Uang**)
- 2005 – 2006 **“ATC-63: Issues Affecting the R-Factor Determination of Autoclaved Aerated Concrete (AAC) Buildings”**. Establishment of a recommended methodology for reliable quantification of building system performance ( $R$ ,  $C_d$ ,  $Q_o$ ) and response parameters for use in seismic design. The specific task was the investigation of issues for development of

- seismic provisions of AAC lateral load resisting systems. Worked with Professors **H. Krawinkler, F. Zareian** as part of Applied Technology Council (ATC) – 63 project)
- 2005 – 2006 **“Evaluation of New Base Isolation Devices”**. Experimental evaluation and validation of a new base isolation device with a use of shaking table tests. Worked with **Gregory P. Luth & Associates, Inc.**
- 2003 – 2004 **“Evaluation of Modal Pushover Analysis Using Irregular Generic Frames”** Worked on significance of sources of structural irregularities on seismic response of moment frames based on modal pushover analysis. Worked with Professor **H. Krawinkler**.
- 2003 – 2004 **“System Reliability of Steel Structures based on Interstory Drift and Direct Loss Demands”**. Worked on system reliability of structural systems under seismic excitations including loss estimation approaches in order to suggest cost effective retrofitting techniques of structural systems. Worked with Professor **C. Menun**.

#### National Technical University of Athens (NTUA)

- 2002 – 2003 **“Effects of Near Fault Ground Motions on Seismic Demands of Steel Structures”**  
Worked on investigation of strengthening techniques for steel structures subjected to near fault ground motions. Worked with Professor **C. J. Gantes**.
- 2002 – 2003 **“Development of Simplified Models for Structural Stability of Steel Structures”**  
Worked on evaluation of stability of arc and shell structures based on simplified models, using the Dynamic Approach. Worked with Professor **C. J. Gantes**.

#### Professional Experience - Consulting

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- 2008 – 2009 **“Seismic R (*q*)-factor determination for the structural design of the new 40.000 seat soccer stadium of Panathinaikos F.C in Votanikos, Greece”**. In collaboration with Kologiannis and Associates and Professor Charis J. Gantes (National Technical University of Athens) (<http://www.stadiumguide.com/paoathensarena.htm>)

#### Teaching

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##### Stanford University, Department of Civil and Environmental Engineering

- Autumn 2009 **CEE 385 – “Performance-Based Earthquake Engineering”** (Co-Instructor)  
Teaching weekly and develop material and tools distributed to class for analytical simulation, modeling, testing and loss estimation of deteriorating structural systems. The 5-hr lecture series is offered to *Ph.D.* and 2<sup>nd</sup> year *MS* students (*Class is coordinated by Professor H. Krawinkler*)
- Autumn 2008 **CEE 385 – “Performance-Based Earthquake Engineering”** (Teaching Associate)  
Voluntarily assisted in teaching weekly and developed material and tools distributed to class for analytical simulation, modeling, testing and loss estimation of structural systems. The 5-hr lecture series that was offered for a first time was taught to *Ph.D.* and 2<sup>nd</sup> year *MS* students (*Class was offered by Professor H. Krawinkler*)
- Fall 2008 **CEE 285 - “Design of Structural Systems for Buildings”** (Teaching Assistant)  
Assisted in teaching weekly and developed material distributed to class for a 7-hr lecture series of graduate course dealing with basic design concepts, performance criteria, loading, methods of design, types of structural systems, behavior under gravity and lateral loads (*Class was offered by Professor H. Krawinkler*)
- Fall 2006 **CEE 286 – “Advanced Structural Design”** (Teaching Assistant)

- Voluntarily assisted in teaching weekly 4-hr lecture series of graduate course dealing with strength of elements, plastic analysis, plate theory and steel connections (*Class was offered by Professor H. Krawinkler*)
- Fall 2004     **CEE 181 – “Design of Steel Structures”** (Teaching Assistant)  
Assisted in teaching weekly and developed material distributed to class for a senior-level undergraduate elective course for general engineering students dealing with design of steel structures (*Class was offered by Professor G. Deierlein*)

## Book Chapters

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1. Krawinkler, H., Zareian, F., **Lignos, D. G.**, Ibarra L. F. (2009). “Significance of Modeling Deterioration in Structural Components for Predicting the Collapse Potential of Structures under Earthquake Excitations”, Book Chapter in “Performance-Based Earthquake Engineering”, to be Published by Springer, NY, December, 2009.
2. Krawinkler, H., **Lignos, D. G.**, (2009). “How to Predict the Probability of Collapse of Non-Ductile Building Structures”, Book Chapter in “Seismic Risk Assessment and Retrofitting”, Chapter 17<sup>th</sup> Published by Springer, NY, November, 2009.

## Refereed Journal Publications

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3. **Lignos, D. G.**, Krawinkler, H., Whittaker, A., (2009). “Prediction and Validation of Sidesway Collapse of Two Scale Models of a 4-Story Steel Moment Frame”, *Earthquake Engineering and Structural Dynamics* (Accepted for publication)
4. Krawinkler, H., Zareian, F., **Lignos, D. G.**, Ibarra L. F. (2009). “Basic Concepts and Performance Measures in Prediction of Collapse of Buildings under Earthquake Ground Motions”, *The Structural Design of Tall and Special Buildings Journal* (Accepted for publication)
5. **Lignos, D. G.**, Krawinkler, H., (2009). “Deterioration Modeling of Steel Beams and Columns in Support to Collapse Prediction of Steel Moment Frames”, (Submitted in ASCE, *Journal of Structural Engineering*)
6. **Lignos, D. G.**, Krawinkler, H., (2009). “Relationships for Deterioration Modeling of Tubular Steel Sections under Varying Axial Load for Collapse Assessment of Steel Frames”, (Submitted in *Journal of Constructional Steel Research*)
7. **Lignos, D. G.**, Kolios, D., Miranda, E., (2008). “Fragility Assessment of Reduced Beam Section Moment Connections”, (Submitted in ASCE *Journal of Structural Engineering – under review*)
8. Noh, H. Y., Nair, K. K., **Lignos, D. G.**, Kiremidjian, A., (2009). “On the Use of Wavelet Based Damage Sensitive Features for Structural Damage Diagnosis using Strong Motion Data”, (Submitted in ASCE *Journal of Structural Engineering, under review*)

## Refereed Journal Publications to be Submitted

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9. **Lignos, D. G.**, Miranda, E., (2009). “Simplified Methods for Performance Evaluation of Steel Structures based on Fragility Assessment of Steel Moment Connections”, (Draft paper has been completed: To be submitted in ASCE *Journal of Structural Engineering*)
10. **Lignos, D. G.**, Miranda, E., (2009). “Estimation of Ground Motion Response based on Blind System Identification”, (Draft paper has been completed: To be submitted in *Journal of Earthquake Engineering and Structural Dynamics*)
11. **Lignos, D. G.**, Hunt, C. M., Krebs, A., Billington, S., (2009). “A Performance – based Earthquake Engineering Assessment of Retrofitted Steel Frames with Ductile Concrete Infill Panels Compared

to Traditional Buckling Restraint Braces and Conventional Dampers”, (Draft paper has been completed: to be submitted in *Journal of Earthquake Engineering and Structural Dynamics*)

## Refereed Journal Publications in Preparation

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12. **Lignos, D. G.**, Krawinkler, H. (2009). “Yield and Tensile Strength Ratios of W-Steel Sections: Expected Values and Correlations for Reliability Analysis of Steel Moment Connections”, (In Preparation to be submitted in AISC (American Institute of Steel Construction) *Engineering Journal*).
13. **Lignos, D. G.**, Krawinkler H., Whittaker A. S. (2009). “Lessons learnt from Recent Earthquake Simulator Collapse Tests of Steel Moment Frame Structures”, (In preparation to be submitted in *Journal of Earthquake Engineering*)
14. Noh, H. Y., **Lignos, D. G.**, Nair, K.K., Kiremidjian, A. S. (2009). “Development of Fragility Functions for Structural Systems Using Wavelet based Damage Sensitive Features for Performance Based Earthquake Engineering Assessment”, (In preparation to be submitted in *Journal of Earthquake Engineering and Structural Dynamics*)
15. **Lignos, D. G.**, Myers, A. Smith, C., Krawinkler, H., Deierlein, G.G. (2009). “Low Cyclic Fatigue of Steel Connections: Experimental and Analytical Validation of Modified Void Growth Models for Cyclic Loading”, (In preparation to be submitted in *ASCE Journal of Structural Engineering*)

## Refereed Conference Publications

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16. **Lignos, D. G.**, Krawinkler, H., Whittaker, A., (2009). “Contributions to Collapse Prediction of Steel Moment Frames Through Recent Earthquake Simulator Collapse Tests”, *Proceedings 3<sup>rd</sup> International Conference on Advances in Experimental Structural Engineering*, October 15-16, San Francisco, CA, 2009
17. **Lignos, D. G.**, Billington, S. L. (2009). “Hybrid Testing of a Retrofitted Steel Moment Resisting Frame with Infill Panels”, *Proceedings 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering: Reaching Beyond Borders*, July 25-29, Toronto, Canada, 2010 (Accepted for publication)
18. Noh, H. Y., **Lignos, D. G.**, Nair, K., Kiremidjian, A., (2009). “Development of Fragility Functions for Buildings Based on Wavelet Coefficient Energies”, *Proceedings 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering: Reaching Beyond Borders*, July 25-29, Toronto, Canada, 2010 (accepted for publication)
19. **Lignos, D. G.**, Hunt, C. M., Krebs, A., Billington, S., (2009). “Comparison of Retrofitting Techniques for Existing Steel Moment Resisting Frames”, *Proceedings ATC&SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*, December 9-11, San Francisco, CA, 2009
20. **Lignos, D. G.**, Krawinkler, H., Zareian, F. (2009). “Modeling of Component Deterioration for Collapse Prediction of Steel Frames”, *Proceedings of 6<sup>th</sup> International Conference on Behavior of Steel Structures in Seismic Areas, STESSA 2009*, Philadelphia, Pennsylvania, USA
21. Noh, H. Y., **Lignos, D. G.**, Nair, K., Kiremidjian, A., (2009). “Application of Wavelet Coefficient Energies of Stationary and Non-stationary Response Signals for Structural Damage Diagnosis”, *Proceedings 7<sup>th</sup> International Workshop on Structural Health Monitoring*, Stanford, CA, September 9-11, 2009
22. **Lignos, D. G.**, Krawinkler, H., Whittaker, A., (2008). “Shaking Table Collapse Tests of a 4 – Story Steel Moment Frame”, *Proceedings 14<sup>th</sup> World Conference in Earthquake Engineering* Beijing, China, October 12-17, 2008

23. **Lignos, D. G.**, Zareian, F., Krawinkler, H., (2008). “Reliability of a 4-Story Steel Moment Resisting Frame against Collapse Due to Seismic Excitations”, *Proceedings ASCE Structures Congress*, Vancouver, BC, Canada, SEI institute
24. **Lignos, D. G.**, Krawinkler, H., Whittaker, S. A., (2008). “Collapse Tests of Two Scale Models of a Steel Frame Structure”, *Proceedings 6<sup>th</sup> NEES (Network for Earthquake Engineering Simulation) Annual Meeting*, Portland, Oregon, June 18<sup>th</sup> – 20<sup>th</sup>, 2008
25. **Lignos, D. G.**, Krawinkler, H., Whittaker, S. A., (2008). “Analytical and Experimental Prediction of Sidesway Collapse of Steel Frames”, *Proceedings 6<sup>th</sup> National Conference of Steel Structures*, Ioannina, Greece
26. **Lignos, D. G.**, Krawinkler, H., (2007). “A Database in Support of Modeling of Component Deterioration for Collapse Prediction of Steel Frame Structures”, *Proceedings ASCE Structures Congress*, Long Beach CA, SEI institute
27. **Lignos, D. G.**, Krawinkler, H., Gantes, C. J., (2006). “Seismic Demands for Frames with Strength and Stiffness Irregularities Based on MPA”, *Proceedings 5<sup>th</sup> International Conference on Behavior of Steel Structures in Seismic Areas*, STESSA 2006, Yokohama Japan
28. **Lignos, D. G.**, Gantes, C. J., (2005). “Modal Pushover Analysis as a Tool for Practical Design of Structures”, *Proceedings 3<sup>rd</sup> conference on Mechanics and Solids*, MIT, paper 008
29. **Lignos, D. G.**, Stergiou, E.C., Gantes, C. J., (2005). “Structural Reliability of Steel Structures Based on Interstory Drift and Direct Loss Demands”, *Proceedings 5<sup>th</sup> GRACM conference on computational mechanics*, Cyprus
30. **Lignos, D. G.**, Gantes, C. J., (2005). “Design Considerations for the Effects of Near Fault Ground Motions on Steel Structures”, *Proceedings 5<sup>th</sup> national conference on steel structures*, Xanthi, Greece
31. **Lignos, D. G.**, Gantes, C. J., (2005). “Seismic Demands for Steel-Braced Frames with Stiffness Irregularities Based on Modal Pushover Analysis”, *Proceedings 4<sup>th</sup> European workshop on seismic behavior of irregular and complex structures*, Thessalonica, Greece

### **Invited Papers in Referred Conference Publications**

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32. **Lignos, D. G.** (2010). “Linking Structural Health Monitoring with Performance based Earthquake Engineering”, *Proceedings 10<sup>th</sup> International Conference on Computational Structures Technology*, Valencia, Spain, 14-17 September, 2010 (Invited paper at the Special Session: Damage Identification Methods)
33. **Lignos, D. G.**, Krawinkler H. (2010). “A Steel Component Database for Deterioration Modeling of Steel Beams with RBS under Cyclic Loading,” *Proceedings ASCE Structures Congress, Orlando Florida, May 12-15, 2010* (Invited paper in session: Limit state evaluation of steel framed structures using the ATC 63 methodology)
34. Zareian, F., **Lignos, D. G.**, Krawinkler, H. (2010). “Evaluation of Seismic Collapse Performance of Steel Special Moment Resisting Frames Using the ATC-63 Methodology”, *Proceedings ASCE Structures Congress, Orlando Florida, May 12-15, 2010* (Invited paper in session: Limit state evaluation of steel framed structures using the ATC 63 methodology)
35. Miranda, E., **Lignos, D. G.** (2009). “Estimation of Seismic Performance of Existing Steel Moment Resisting Frame Buildings by Using Continuous Models,” *Proceedings ATC&SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*, December 9-11, San Francisco, CA, 2009. (Invited paper in session: Improving the seismic performance of existing structures through monitoring)
36. Krawinkler, H. Zareian, F., **Lignos, D. G.**, Ibarra, L. F. (2009). “Prediction of Collapse of Structures Under Earthquake Excitations”, *Proceedings COMPDYN09* Rhodes, Greece, June 22-24, 2009 (Invited paper and keynote lecture)

37. **Lignos, D. G.**, Krawinkler, H., and Whittaker, S. A., (2009). "Collapse Assessment of a 4-story Steel Moment-resisting Frame", *Proceedings COMPDYN09*, Rhodes, Greece, June 22-24, 2009 (Invited paper in Progress and Challenges in Collapse Prediction, mini-symposium)
38. Zareian, F., **Lignos, D. G.**, Krawinkler, H. (2009). "Quantification of Modeling Uncertainties for Collapse Assessment of Structural Systems under Seismic Excitations," *Proceedings COMPDYN09* Rhodes, Greece, June 22-24, 2009 (Invited paper in Progress and Challenges in Collapse Prediction, mini-symposium)
39. Zareian, F., Krawinkler, H., **Lignos, D. G.**, Ibarra, L. O., (2008). "Predicting Collapse of Frame and Wall Structures", *Significant Accomplishments and Future Directions in Earthquake Engineering - In Memory of Professor Takuji Kobori. Proceedings 14<sup>th</sup> World Conference in Earthquake Engineering* Beijing, China. (Invited paper)
40. Krawinkler, H., **Lignos, D. G.**, (2007). "How to Predict and Reduce the Probability of Collapse of Non-Ductile Building Structures", *Proceedings International Workshop On Measures for the Prevention of Total Collapse of Existing Low-Rise Structures*, November 19-20, Istanbul Technical University, Istanbul, Turkey (Invited paper)

### Technical Reports in Press

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41. **Lignos, D. G.** (2009). "Interactive Interface for Incremental Dynamic Analysis: Theory and Example Applications Manual, Version 1.1.a", Department of Civil and Environmental Engineering, Stanford University, CA, May, 2009
42. Krebs, A., D., **Lignos, D. G.**, Billington, S. L., (2009). "Comparison of Alternative Seismic Retrofit Techniques for Steel Moment Resisting Frames", Department of Civil and Environmental Engineering, Stanford University, CA, March, 2009
43. **Lignos, D. G.**, (2008). "Sidesway Collapse of Deteriorating Structural Systems under Seismic Excitations," *Ph.D. Dissertation*, Department of Civil Engineering, Stanford University, Stanford, CA
44. Hubult, E., **Lignos, D. G.**, Krawinkler, H. (2008). "Assessing Potential of Adobe Walls Reinforced with Polymer Mesh," *Undergraduate Honors Thesis*, Department of Civil Engineering, Stanford University, Stanford CA, June, 2008
45. Hunt, C. M., **Lignos, D. G.**, Billington, S. L., (2008). "Evaluation of Energy Absorbent Infill Panels for Seismic Retrofit through OpenSees Simulation", Department of Civil Engineering, Stanford University, Stanford, CA, June, 2008
46. **Lignos, D. G.**, Krawinkler, H., (2007). "Contributions to Collapse Prediction for Frame Structures", Kajima-CUREE Joint Research Program, Phase VI: Investigation of Factors Leading to Progressive Collapse of Structures. Category 2 Analysis of Structural Component Failure
47. Krawinkler, H., Zareian, F., Haas, K., **Lignos, D. G.**, (2006). "Issues Affecting the R-Factor Determination of Autoclaved Aerated Concrete (AAC) Buildings," Part of the Applied Technology Council (ATC-63) project on Quantification of Building System Performance and Response Parameters
48. **Lignos, D. G.**, Gantes, C. J., (2003). "Advanced nonlinear techniques to investigate the effects of mass and stiffness irregularities on seismic demands of steel moment frames", *Diploma Thesis*, Laboratory of Metal Structures, National Technical University of Athens (NTUA)

### Invited and Plenary Talks

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49. **Lignos, D. G.**, (2009). "State of Knowledge on Collapse Assessment of Structural Systems", McGill University, Canada, Department of Civil & Environmental Engineering, May, 29<sup>th</sup>, 2009 (Invited Talk)

50. **Lignos, D. G.**, (2008). “State of Knowledge on Collapse Assessment of Frame Structures”, University of Cyprus, Civil and Environmental Engineering, Seminar Series: “The Engineer in Society”, December 17<sup>th</sup> 2008 (Invited Talk)
51. **Lignos, D. G.**, (2008). “Sidesway Collapse of Deteriorating Structural Systems under Seismic Excitations”, National Technical University of Athens (NTUA), Laboratory of Metal Structures, October 8<sup>th</sup> 2008 (Invited Talk)
52. **Lignos, D. G.**, Krawinkler H., (2008). “Collapse Tests of Two Scale Models of a Steel Frame Structure”, 6<sup>th</sup> NEES (*Network for Earthquake Engineering Simulation*) Annual Meeting, Portland, Oregon, June 18<sup>th</sup> – 20<sup>th</sup>, 2008 (Plenary Talk)
53. **Lignos, D. G.**, (2008). “Analytical and Experimental Prediction of Sidesway Collapse of Deteriorating Structural Systems”, Structural Engineers Association of Southern California (SEAONC), San Francisco, CA May 19<sup>th</sup> 2008 (Invited Talk)
54. **Lignos, D. G.**, (2008). “Contributions to Collapse Prediction of Frame Structures: Accomplishments, Future Implications and Directions”, Ecole Polytechnique Fédérale de Lausanne (EPFL), Research Seminar, Lausanne, Switzerland, April 10<sup>th</sup> 2008 (Invited Talk)
55. **Lignos, D. G.**, (2008). “Contributions to Collapse Prediction of Frame Structures: Accomplishments, Future Implications and Directions”, University of Massachusetts at Amherst, Research Seminar, March 5<sup>th</sup> 2008 (Invited Talk)
56. **Lignos, D. G.**, (2007). “Sidesway Collapse of Deteriorating Structural Systems under Seismic Excitations,” University at Buffalo NY, MCEER, NEES Research Seminar, July 20<sup>th</sup> 2007 (Invited Talk)
57. **Lignos, D. G.**, Krawinkler H., (2006). “A Database for Modeling Deterioration in Beams and Columns Subjected to Cyclic Bending Moments,” 4<sup>th</sup> NEES (*Network for Earthquake Engineering Simulation*) Annual Meeting, Washington DC, June 18<sup>th</sup>-20<sup>th</sup>, 2006 (Plenary Talk)

## **Student Research Supervision**

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### **M.S. Degree**

- Patton, Steven, Stanford University, CA (2005)  
Position: Structural Engineer, Nabih Youssef & Associates Inc.
- Ahuja Yash, Stanford University, CA (2006)  
Position: Structural Engineer, United Arab Emirates
- Soriano, Guillermo, Stanford University, CA (2006)  
Position: Structural Engineer, Walter P. Moore
- Weiner Richard, Stanford University, CA (2008)  
Position: Structural Engineer, Weidlinger Associates Inc.
- Carlos Molina Hunt, Stanford University, CA (2008, 2009)  
Position: MS Student, Stanford University, CA
- Andrew D. Krebs, Stanford University, CA (2008, 2009)  
Position: MS Student, Stanford University, CA
- Laura Eads, Stanford University, CA (2009, till now)  
Position: MS Student, Stanford University, CA
- Nathan, Edward Canney, Stanford University, CA (2009, till now)  
Position: MS Student, Stanford University, CA

### **Bachelor’s Degree**

- Yavor, Yotov, Stanford, University, CA, Summer Intern (2006)  
Position: Structural Engineer, Bridgefarmer & Associates, Inc.
- Chiew Karhim, State University at Buffalo, Buffalo, NY (REU Program) (2007)  
Position: MS Student, State University at Buffalo, Buffalo, NY

Alborn, Matthew, State University at Buffalo, NY (REU Program) (2007)  
Position: MS Student, Rutgers University, NJ  
Norlund, Melissa, State University at Buffalo, NY (REU Program) (2007)  
Position: MS Student, University of Patras, Greece and University of Pavia, Italy  
Hug, Kelley, Stanford, University, CA, Summer Intern (2009)  
Position: Bachelor's Student, Stanford University, CA  
Castillo, Fernando, Stanford, University, CA, Summer Intern (2009)  
Position: Bachelor's Student, Stanford University, CA

## **Professional Memberships**

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American Society of Civil Engineers (ASCE), *Associate Member*  
American Concrete Institute (ACI)  
American Institute of Steel Construction INC (AISC)  
Earthquake Engineering Research Institute (EERI)  
Network for Earthquake Engineering Simulation (NEES)  
National Information Center of Earthquake Engineering (NICEE)  
United States Geological Survey (USGS)  
Hellenic Society of Civil Engineers

## **Referee Work - Official Reviewer in Engineering Journals**

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ASCE, Journal of Structural Engineering  
Earthquake Engineering and Structural Dynamics

## **Referee Work in Earthquake Engineering Conferences**

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9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering, Reaching Beyond Borders, Toronto, Canada, July, 25-29, 2010  
3<sup>rd</sup> International Conference on Advances on Experimental Structural Engineering (3AESE), San Francisco, 15-16, 2009, CA.

## **Software Development**

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**2007 – 2009**      **IIDAP, Version 1.1.a:** “Interactive Interface for Incremental Dynamic Analysis Procedure”, Nonlinear dynamic analysis software that includes all recent deterioration models and is able to conduct incremental dynamic analysis for single degree of freedom systems utilizing different sets of ground motions and alternative state of the art scaling techniques. The program is also able to develop fragility functions for different damage states given a hazard level. Available for free by request only. *Copyright Protected.*

Used from graduate students at Stanford University in the following graduate classes:  
**CEE 385: “Performance-Based Earthquake Engineering”**, (Offered by H. Krawinkler)  
**CEE 288: “Earthquake Hazard and Risk Analysis”**, (Offered by A. Kiremidjian)

## **Skills**

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**Languages:** Native Greek, fluent in written and spoken English

High level of computer knowledge ( Java, C++, FORTRAN, Visual Basic Applications (VBA), MySQL, php, html, MATLAB, DADiSP, ABAQUS, ANSYS, NASTRAN, Solidworks, AutoCAD) and Structural Engineering Software Packages (SAP, ETABS, RAM Perform CSI)