

# Stanford

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## Eduardo Miranda

Professor of Civil and Environmental Engineering

### CONTACT INFORMATION

- **Administrator**

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### Bio

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#### BIO

Miranda's research involves development of knowledge and tools to integrate structural engineering with construction and management engineering in order to design projects that perform better, are faster to build and are more economical to design, build and maintain. Other areas of research include performance-based engineering and earthquake engineering

#### ACADEMIC APPOINTMENTS

- Professor, Civil and Environmental Engineering

#### PROFESSIONAL EDUCATION

- PhD, UC Berkeley (1991)

### Teaching

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#### COURSES

##### 2017-18

- Advanced Structural Steel Behavior and Design: CEE 285B (Win)
- Earthquake Resistant Design and Construction: CEE 287 (Spr)
- Performance-Based Earthquake Engineering: CEE 385 (Aut)

##### 2016-17

- Advanced Structural Steel Behavior and Design: CEE 285B (Win)
- Earthquake Resistant Design and Construction: CEE 287 (Spr)
- Performance-Based Earthquake Engineering: CEE 385 (Aut)

##### 2015-16

- Advanced Structural Steel Behavior and Design: CEE 285B (Win)
- Earthquake Resistant Design and Construction: CEE 287 (Spr)

- Performance-Based Earthquake Engineering: CEE 385 (Aut)

#### 2014-15

- Advanced Structural Steel Behavior and Design: CEE 285B (Win)
- Earthquake Resistant Design and Construction: CEE 287 (Spr)
- Performance-Based Earthquake Engineering: CEE 385 (Aut)

### STANFORD ADVISEES

#### Doctoral Dissertation Advisor (AC)

Pablo Camilo Heresi Venegas

## Publications

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### PUBLICATIONS

- **EFFECTS OF MODELLING UNCERTAINTY ON PROBABILISTIC BUILDING RESPONSE ANALYSIS**  
Aslani, H., Miranda, E.
- **Probabilistic Study of Peak Floor Acceleration Demands in Nonlinear Structures**  
Taghavi, S., Miranda, E.
- **Nonparametric estimation of reliability and survival function for continuous-time finite Markov processes** A. Sadek and N. Limnios 1 A Bayesian multiple comparison procedure for ranking the means of normally distributed data  
Bratcher, T., Hamilton, C., Ngatchou-Wandji, J., Ryabko, B. Y., Monarev, V. A., Belzunce, F., Miranda, E.
- **CRITICAL REVIEW OF DISPLACEMENT MODIFICATION FACTORS IN FEMA-273/356**  
Akkar, S., Miranda, E., Ruiz-García, J.
- **The Earthquake Engineering Online Archive NISEE e-Library**  
Alimoradi, A., Miranda, E., Taghavi, S., Naeim, F.
- **The Earthquake Engineering Online Archive NISEE e-Library**  
Ruiz-Garcia, J., Miranda, E.
- **The Earthquake Engineering Online Archive NISEE e-Library**  
Inaudi, J. A., Kelly, J. M.
- **The Earthquake Engineering Online Archive NISEE e-Library**  
Battaglia, M., Roberts, C., Segall, P.
- **STRENGTH REDUCTION FACTORS FOR THE DYNAMIC INSTABILITY OF OSCILLATORS WITH NON-TRIVIAL BACKBONES**  
Vamvatsikos, D., Akkar, S. D., Miranda, E.
- **Performance-Based Seismic Assessment of a Recently Built High-Speed Rail Viaduct in Spain. The Archidona Viaduct**  
Gordo-Monso, C., Miranda, E.
- **OPuS: Eingang zum Volltext**  
Kang, S., Miranda, E.
- **Novel Sliding/Frictional Connections for Improved Seismic Performance of Gypsum Wallboard Partitions**  
Araya-Letelier, G., Miranda, E.
- **Improved Estimation of Collapse Risk for Structures in Seismic Regions**  
Eads, L., Miranda, E., Krawinkler, H., Lignos, D. G.
- **Evaluation of Seismic Displacement Demands from Ground Motions Recorded in Recent Earthquakes**

Ruiz-García, J., Miranda, E.

- **DEVELOPMENT OF IMPROVED INTENSITY MEASURES AND IMPROVED SHAKEMAPS FOR LOSS ESTIMATION AND EMERGENCY RESPONSE**  
Miranda, E., Kyriakides, M., Fu, Q.
- **Assessment of seismic performance factors for steel corrugated shear wall system using non-linear analysis**  
Vigh, L. G., Deierlein, G. G., Miranda, E., Liel, A., Tipping, S.
- **Analytical model calibration and performance quantification**  
Vigh, L. G., Deierlein, G. G., Miranda, E., Tipping, S.
- **3D Simulation and Visualization of Crane Assisted Construction Erection Processes**  
Kang, S. C., Chi, H. L., Miranda, E.
- **Towards Creating Earthquake-Safe Communities: Seismic Retrofit of an Adobe School Building in Rural Peru Using Geomesh**  
Cedillos, V., Tucker, B., Blondet, M., Carpio, J., Quispe, J., Rondon, S., Miranda, E.
- **Effects of Site Conditions of Earthquake-Resistant Design of Structures** *Structures Congress XII*  
Bertero, V. V., Miranda, E.  
: 561-566
- **Component model calibration for cyclic behavior of a corrugated shear wall** *Thin-Walled Structures*  
Vigh, L. G., Liel, A. B., Deierlein, G. G., Miranda, E., Tipping, S.  
2014; 75: 53-62
- **Seismic performance assessment of steel corrugated shear wall system using non-linear analysis** *JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH*  
Vigh, L. G., Deierlein, G. G., Miranda, E., Liel, A. B., Tipping, S.  
2013; 85: 48-59
- **Ethnic Variation in Chronic Graft-Versus-Host Disease (cGVHD) Manifestations** *BMT Tandem Meetings*  
Correa, M. E., Miranda, E., Vigorito, A., Bouzas, L. F., Funke, V., Colturato, V. A., Moreira, M. C., Tavares, R., Mauad, M. A., de Souza, M. P., Arai, S., Lee, S. J., Storer, et al  
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- **An efficient method for estimating the collapse risk of structures in seismic regions** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Eads, L., Miranda, E., Krawinkler, H., Lignos, D. G.  
2013; 42 (1): 25-41
- **Estimation of base motion in instrumented steel buildings using output-only system identification** *Earthquake Engineering & Structural Dynamics*  
Lignos, D. G., Miranda, E.  
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- **Fragility functions for pre-Northridge welded steel moment-resisting beam-to-column connections** *ENGINEERING STRUCTURES*  
Ramirez, C. M., Lignos, D. G., Miranda, E., Kolios, D.  
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- **Significance of residual drifts in building earthquake loss estimation** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Ramirez, C. M., Miranda, E.  
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- **Expected earthquake damage and repair costs in reinforced concrete frame buildings** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Ramirez, C. M., Liel, A. B., Mitrani-Reiser, J., Haselton, C. B., Spear, A. D., Steiner, J., Deierlein, G. G., Miranda, E.  
2012; 41 (11): 1455-1475
- **Performance of Port Facilities in Southern Chile during the 27 February 2010 Maule Earthquake** *EARTHQUAKE SPECTRA*  
Brunet, S., Carlos de la Llera, J., Jacobsen, A., Miranda, E., Meza, C.  
2012; 28: S553-S579
- **Performance of Nonstructural Components during the 27 February 2010 Chile Earthquake** *EARTHQUAKE SPECTRA*

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- Miranda, E., Mosqueda, G., Retamales, R., Pekcan, G.  
2012; 28: S453-S471
- **Helmut Krawinkler, 1940-2012** *Earthquake Spectra*  
Deierlein, G., Miranda, E., Miranda, E., Kiremidjian, A.  
2012; 3 (28): 1297-1299
  - **Deaggregation of Collapse Risk**  
Eads, L., Miranda, E., Krawinkler, H., Lignos, D. G.  
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  - **Deaggregation of Collapse Risk**  
Eads, L., Miranda, E., Krawinkler, H., Lignos, D. G.  
2012
  - **The generation of high Sr/Y plutons following Late Jurassic arc-arc collision, Blue Mountains province, NE Oregon** *LITHOS*  
Schwartz, J. J., Johnson, K., Miranda, E. A., Wooden, J. L.  
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  - **Behavior of Nonstructural Components in Recent Earthquakes**  
Fierro, E. A., Miranda, E.  
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  - **Fragility Assessment of Reduced Beam Section Moment Connections** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
Lignos, D. G., Kolios, D., Miranda, E.  
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  - **Enhanced Building-Specific Seismic Performance Assessment** *Workshop on Advances in Performances-Based Earthquake Engineering*  
Miranda, E.  
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  - **Probabilistic estimation of residual drift demands for seismic assessment of multi-story framed buildings** *ENGINEERING STRUCTURES*  
Ruiz-Garcia, J., Miranda, E.  
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  - **Estimation of Maximum Roof Displacement Demands in Regular Multistory Buildings** *JOURNAL OF ENGINEERING MECHANICS-ASCE*  
Lin, Y., Miranda, E.  
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  - **Evaluation of equivalent linear methods for estimating target displacements of existing structures** *ENGINEERING STRUCTURES*  
Lin, Y., Miranda, E.  
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  - **Three-Dimensional Simulation and Visualization of Crane Assisted Construction Erection Processes** *JOURNAL OF COMPUTING IN CIVIL ENGINEERING*  
Kang, S., Chi, H., Miranda, E.  
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  - **Seismic History Analysis of Asymmetric Buildings with Soil-Structure Interaction** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
Lin, J., Tsai, K., Miranda, E.  
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  - **Numerical Methods to Simulate and Visualize Detailed Crane Activities** *COMPUTER-AIDED CIVIL AND INFRASTRUCTURE ENGINEERING*  
Kang, S., Miranda, E.  
2009; 24 (3): 169-185
  - **Response Spectrum Method for Estimation of Peak Floor Acceleration Demand** *Improving the Seismic Performance of Existing Buildings and Other Structures*  
Taghavi, S., Miranda, E.  
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- **A Comprehensive Study of Floor Acceleration Demands in Multi-Story Buildings**  
Miranda, E., Taghavi, S.  
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- **Estimation of Seismic Performance of Existing Steel Moment Resisting Frame Buildings by Using Continuous Models** *Improving the Seismic Performance of Existing Buildings and Other Structures*  
Miranda, E., Lignos, D.  
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- **Building-specific loss estimation methods & tools for simplified performance-based earthquake engineering** *Stanford University*  
Ramirez, C. M., Miranda, E.  
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- **Noniterative Equivalent Linear Method for Evaluation of Existing Structures** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
Lin, Y., Miranda, E.  
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- **Kinematic soil-structure interaction effects on maximum inelastic displacement demands of SDOF systems** *BULLETIN OF EARTHQUAKE ENGINEERING*  
Lin, Y., Miranda, E.  
2008; 6 (2): 241-259
- **Computational methods for coordinating multiple construction cranes** *Journal of Computing in Civil Engineering*  
Kang, S. C., Miranda, E.  
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- **Dermabrasion for rhytids in the lateral canthal region** *AESTHETIC PLASTIC SURGERY*  
Gruber, R., Miranda, E., Antony, A.  
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- **Probabilistic estimation of maximum inelastic displacement demands for performance-based design** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Ruiz-Garcia, J., Miranda, E.  
2007; 36 (9): 1235-1254
- **Parametric study of single-degree-of-freedom systems with energy dissipating devices built on soft soil sites** *ENGINEERING STRUCTURES*  
Jara, J. M., Miranda, E., AYALA, A. G.  
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- **Simplified Analysis for Preliminary Design of Base-Isolated Structures** *New Horizons and Better Practices*  
Ramirez, C. M., Miranda, E.  
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- **Evaluation of residual drift demands in regular multi-storey frames for performance-based seismic assessment** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
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- **The genome of the sea urchin *Strongylocentrotus purpuratus***. *Science*  
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- **Planning and visualization for automated robotic crane erection processes in construction** *1st Conference on the Future of the AEC Industry*  
Kang, S., Miranda, E.  
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- **Generalized interstory drift spectrum** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Inelastic displacement ratios for evaluation of structures built on soft soil sites** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Ruiz-Garcia, J., Miranda, E.  
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- **Residual displacement ratios for assessment of existing structures** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
Ruiz-Garcia, J., Miranda, E.  
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- **Use of probability-based measures for automated damage assessment** *STRUCTURAL DESIGN OF TALL AND SPECIAL BUILDINGS*  
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- **Evolutionary modal identification utilizing coupled shear-flexural response - Implication for multistory buildings - Part I: Theory** *STRUCTURAL DESIGN OF TALL AND SPECIAL BUILDINGS*  
Alimoradi, A., Miranda, E., Taghavi, S., Naeim, F.  
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- **Modelling considerations in probabilistic performance-based seismic evaluation: case study of the I-880 viaduct** *International Workshop on Performance-Based Design- Concepts and Implementation*  
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- **Evolutionary System Identification of Coupled Shear-Flexural Response for Seismic Damage Detection** *Structures Congress 2006@ sStructural Engineering and Public Safety*  
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- **Dept. of Civil and Environmental Engineering Stanford University Terman Engineering Center, Rm 293 Stanford, CA 94301-4020** *Earthquake engineering: challenges and trends: honoring Luis Esteva*  
Miranda, E.  
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- **Fragility assessment of slab-column connections in existing non-ductile reinforced concrete buildings** *JOURNAL OF EARTHQUAKE ENGINEERING*  
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- **Evaluation of damping reduction factors for estimating elastic response of structures with high damping** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
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- **Probability-based seismic response analysis** *ENGINEERING STRUCTURES*  
Aslani, H., Miranda, E.  
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- **Estimation of floor acceleration demands in high-rise buildings during earthquakes** *STRUCTURAL DESIGN OF TALL AND SPECIAL BUILDINGS*  
Reinoso, E., Miranda, E.  
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- **Approximate floor acceleration demands in multistory buildings. II: Applications** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Approximate floor acceleration demands in multistory buildings. I: Formulation** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Statistical evaluation of approximate methods for estimating maximum deformation demands on existing structures** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
Akkar, S. D., Miranda, E.

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2005
- **Toward Fully Automated Robotic Crane for Construction Erection**  
Kang, S. C., Miranda, E.  
2005
- **Seismic Evaluation of Existing Reinforced Concrete Buildings** *Earthquake Engineering: Essentials And Applications, Earthquake Engineering*  
Miranda, E.  
2005
- **Probabilistic earthquake loss estimation and loss disaggregation in buildings** *Stanford University*  
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2005
- **Errata for " Inelastic Displacement Ratios for Design of Structures on Soft Soils Sites"** *Journal of Structural Engineering(New York, N. Y.)*  
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- **Inelastic displacement ratios for design of structures on soft soils sites** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Performance-based earthquake engineering** *Earthquake engineering: From engineering seismology to performance-based*  
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- **Guerrero Accelerograph Network: Highlights from 20 Years of Operation** *Nevada Seismological Laboratory and Department of Geological Sciences and Engineering*  
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- **Optimization of response simulation for loss estimation using PEER's methodology**  
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- **RAPID ESTIMATION OF FLOOR ACCELERATION DEMANDS IN TALL BUILDINGS DURING EARTHQUAKES** *The impact of the 1994 Northridge earthquake on structural engineering*  
Reinoso, E., Miranda, E.  
2004
- **Physics based model for simulating the dynamics of tower cranes**  
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2004
- **Non-iterative equivalent linear method for displacement-based design**  
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2004
- **A summary of FEMA 440: Improvement of nonlinear static seismic analysis procedures**  
Comartin, C. D., Aschheim, M., Guyader, A., Hamburger, R., Hanson, R., Holmes, W., Miranda, E.  
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- **Improved displacement modification factor to estimate maximum deformations of short period structures** *13th World Conference on Earthquake Engineering*  
Akkar, S., Miranda, E.  
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- **Estimation of seismic acceleration demands in building components** *13th World Conference on Earthquake Engineering*  
S, Taghavi, Miranda  
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- **Assessment of seismic performance in terms of economic losses** *PEER*  
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2004; 5: 149-60
- **A summary of FEMA 440: Improvement of nonlinear static seismic analysis procedures** *13th World Conf. on Earthquake Engineering*  
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- **9.1 A Perspective of Performance-Based Earthquake Engineering**  
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- **Component-level and system-level sensitivity study for earthquake loss estimation**  
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- **Automated simulation of the erection activities in virtual construction**  
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- **Dynamic instability of simple structural systems** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Inelastic displacement ratios for evaluation of existing structures** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
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- **Building specific loss estimation for performance-based design**  
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- **Response assessment of nonstructural building elements** *Pacific Earthquake Engineering Research Center*  
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- **Probabilistic study of peak floor acceleration demands in linear structures**  
Taghavi, S., Miranda, E.  
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- **Critical Review of Equivalent linear methods in ATC-40**  
Akkar, S., Miranda, E.  
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- **Probabilistic response assessment for building-specific loss estimation** *Pacific Earthquake Engineering Research Center, College of Engineering*  
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- **Probabilistic assessment of building response during earthquakes** *Applications of Statistics and Probability in Civil Engineering*  
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- **Evaluación de los factores de reducción de resistencia por ductilidad para estructuras de mampostería cimentadas en terreno firme** *Revista de Ingeniería Sísmica*  
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- **Proceedings of Seminar on Seismic Design, Performance, and Applied Technology Council Retrofit of Nonstructural Components in Critical Facilities**  
**Multidisciplinary Center for Earthquake Engineering Research ESTIMATION OF SEISMIC DEMANDS ON ACCELERATION-SENSITIVE NONSTRUCTURAL COMPONENTS IN CRITICAL FACILITIES**  
Miranda, E., Taghavi, S.  
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- **Influence of stiffness degradation on strength demands of structures built on soft soil sites** *ENGINEERING STRUCTURES*  
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- **Approximate lateral drift demands in multistory buildings with nonuniform stiffness** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Evaluation of approximate methods to estimate maximum inelastic displacement demands** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*  
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- **Estimation of Maximum Inelastic Displacement Demands on SDOF Systems using Approximate Methods** *Abstracts: seventh US national conference on earthquake engineering*  
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- **Bhuj, india earthquake of january 26, 2001-reconnaissance report** *Earthquake Engineering Research Institute*  
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- **Estimation of inelastic deformation demands of SDOF systems** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Instrumentación sísmica de la Catedral Metropolitana resultados 1997-2000** *Revista de Ingeniería Sísmica*  
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- **Measured seismic response of the Mexico City Cathedral**  
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- **Inelastic displacement ratios for structures on firm sites** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*  
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- **Brief Report on the September 3, 2000 Yountville/Napa California Earthquake** *Report prepared for the Pacific Earthquake Engineering Center*  
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- **Seismic behaviour of structures with energy dissipating systems in Mexico**  
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- **Strength reduction factors for multi-degree-of-freedom systems**  
Santa-Ana, P. R., Miranda, E.  
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- **Amplification factors to estimate inelastic displacement demands for the design of structures in the near field**  
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- **Propuesta de espectros de diseño por sismo para el DF** *Memorias del XII Congreso Nacional de Ingeniería Estructural*  
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- **Approximate seismic lateral deformation demands in multistory buildings** *Journal of Structural Engineering*  
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- **Strength reduction factors in performance-based design**  
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- **NATIONAL CENTER FOR DISASTER PREVENTION (CENAPRED) AV. DELFIN MADRIGAL 665, 04360 MEXICO, DF, MEXICO** *Report*  
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