JACOBO BIELAK September 2014

Current Position

Hamerschlag University Professor of Civil and Environmental Engineering
Department of Civil and Environmental Engineering
Carnegie Mellon University
Pittsburgh, PA 15213-3890

Previous Positions

Paul Christiano Professor of Civil and Env. Engrg., CMU (2013-2014)
University Professor of Civil and Env. Engrg., CMU (2009 -)
Professor, Dept. of Civil and Env. Engrg., CMU (1985-2009)
Associate Professor, Dept. of Civil Engineering, CMU (1978-1985)
Associate Professor, Institute of Engineering, Natl. Univ. of Mexico (1977-1978)
Head, Dynamics Group, Institute of Engineering, Natl. Univ. of Mexico (1974-1978)
Research Assistant Professor, Institute of Engineering, Natl. Univ. of Mexico (1971-1977)
Research Fellow, California Institute of Technology (June-Dec 1971)

Education

California Institute of Technology, Ph.D., Civil Engineering, 1971
Rice University; M.S., Civil Engineering, 1966
National University of Mexico; Ingeniero Civil, 1963

Title of Doctoral Thesis: Earthquake Response of Building-Foundation Systems

Professional Activity

Member, Planning Committee of the Southern California Earthquake Center (SCEC) (2011-)
Member, Executive Council, U.S. Association for Computational Mechanics (2010-2014)
Member, Editorial Board, Journal of Multiscale Computational Engineering (2002-)
Member, Editorial Board, ASCE J. of Geotechn. and Geoenvironmental Engrg. (1999-2006)
Member, Editorial Board, Int. J. for Comput. Civil and Struct. Engrg. (1999-)
Member, Editorial Board, Revista de Ingenieria Sísimica (2000-)
Member, National Research Council Committee to Develop a Long-Term Agenda for the Network for Earthquake Engineering Simulation (NEES) (2002-2003)
Member, Task Group for Developing a Vision for Information Technology for NEES (2006)
Chair, Information Technology Strategy Committee, NEES (2005- 2007), Past Chair (2007)
Member, Data Sharing and Archiving Committee, NEES (2003-2005) (Elected 2003)
Member, Scientific Advisory Committee, Pacific Earthquake Engineering Research Center (PEER) (2000-2008)
Principal Investigator, NSF PetaApplications Project "Toward petascale simulation of urban earthquake impacts," (2007-2013)
Principal Investigator, NSF NEESR-SG Project "High-fidelity site characterization by experimentation, field observation, and inversion-based modeling" (2006-2012)
Principal Investigator, NSF Information Technology Research (ITR) Project "Multiresolution high- fidelity earthquake modeling: Dynamic rupture, basin response, blind deconvolution, seismic inversion, and ultrascale computing," (2003-2009)
Principal Investigator, NSF Knowledge Distributed Intelligence (KDI) Project "Large-scale

inversion-based modeling of complex earthquake ground motion in sedimentary basins" (1999-2003)
Principal Investigator, NSF Grand Challenge Groups Project " Earthquake ground motion modeling in large basins" (1993-1998)
Co-Chair, Intl. Assoc. of Seismology and Physics of the Earth's Interior/Int. Assoc of Earthq. Engrg. Joint Working Group on Earthquake Prediction and Effects of Surface Geology on Seismic Motion (2004-)
Member, Intl. Assoc. of Seismology and Physics of the Earth's Interior/Int. Assoc of Earthq. Engrg. Joint Working Group on Earthquake Prediction and Effects of Surface Geology on Seismic Motion (1996-2004)
Member, Focus Group on Soil-Structure Interaction of FEMA 440 Project: Improvement of Inelastic Seismic Analysis Procedures (2003)
Member, Intl. Organizing Committee, 2nd Intl. Symp on the Effect of Surface Geology on Seismic Motion (1998)
Organizer, State-of-the Art in Civil Engineering Workshop to launch cooperation program with the Mexican government to train at CMU faculty members from Mexican state universities (1998)
Member, Intl. Organizing Committee, Intl. Symp. on Parallel Computing in Engrg. Sci. (1997)
Scientist, Southern California Earthquake Center (SCEC) (1996-)
Chairman, Dynamics Committee of ASCE Engrg. Mech. Div. (1985-87); Member (1996-)
Member, Advisory Committee, IUTAM Symposium on Computational Methods for Unbounded Domains (1997)
Organizer, NSF Workshop on Scientific Supercomputing, Visualization, and Animation in Geotechnical Earthquake Engineering and Engineering Seismology (1994)
Chairman of the Faculty, College of Engineering, CMU (1994-1995)
Chairman-Elect of the Faculty, College of Engineering, CMU (1993-1994)
Member, Editorial Board, Numerical Methods for Partial Differential Equations (1984 - 1990)
Chair, College of Engineering Dean's Search Committee, CMU (1992, 2012)
Member, Editorial Board, ASCE J. of Engrg. Mech. (1985-1987)
Member, Panel on Joint US-Mexico Research Agenda for 19 September 1985 Mexico Earthquake, National Research Council (December 1985 – March 1986)
Member, Technical Committee on Soil-Structure Interaction for Project ATC-3, Development of Comprehensive Seismic Design Provisions, Applied Technology Council (1975-1979). The seismic provisions for soil-structure interaction recommended in the final report are based primarily on my work. In modified form, these provisions are now part of the current National Earthquake Hazard Reduction Program (NEHRP) seismic provisions.
Member, Earthquake Engineering Research Institute (1976-)
Member, Seismological Society of America (1973-)
Member, American Society of Civil Engineers (1971-)

Honors and Awards

Fellow of the U.S. Association for Computational Mechanics (2013)
Paul Christiano Professor of Civil and Env. Engng., Initial Holder, CMU (2013)
Distinguished Member of the American Society of Civil Engineers (2011)
Member of the U.S. National Academy of Engineering (2010)
University Professor, CMU (2009)
Paper selected as a 2008 Highlight for *Inverse Problems* (2009)
EERI First Annual Graphics Competition Winner (2008): ShakeOut – Animation of a numerical simulation of a Mw 7.8 earthquake in southern California, http://www.ce.cmu.edu/~rtaborda/shakeout/Movie/ShakeOut_CMU_QuakeGorup_Movie.html

Member of the Mexican Academy of Engineering (2007)
ACM/IEEE SC06 HPC Analytics Challenge Award, (2006)
Outstanding Research Award, College of Engineering, CMU (2004)
Computerworld Honors 21st Century Achievement Awards Laureate (Finalist, 2004)
Gordon Bell Prize for Special Accomplishment Based on Innovation (2003)
Member of the Mexican Academy of Sciences (1999)
Allen Newell Award for Excellence in Research, School of Computer Science, CMU (1998)
The Marsha and Philip L. Dowd Fellowship in Education, College of Engineering, CMU (1998)

Publications

Restrepo, D. and J. Bielak, "Virtual Topography—A fictitious domain approach for analyzing surface irregularities in large-scale earthquake ground motion simulation," *International Journal for Numerical Methods in Engineering in Press* DOI: 10.1002/nme.4756, 2014.

Isbiliroglu, Y., R. Taborda, and J. Bielak, "Multiple structure-soil-structure interaction and coupling effects in building clusters," *Proc. Tenth U.S. National Conference on Earthquake Engineering*, Anchorage, AK, DOI: 10.4231/D3R20RX2T, July 2014.

Isbiliroglu, Y., R. Taborda, and J. Bielak, "Coupled soil-structure interaction effects of building clusters during earthquakes," *Earthquake Spectra in Press*, doi: http://dx.doi.org/10.1193/102412EQS315M, 2014.

Cerda, F., S. Chen, J. Bielak, J.H. Garrett, P. Rizzo, and J. Kovačević, "Indirect structural health monitoring of a simplified laboratory-scale bridge model," *Smart Structures and Systems*, 13 (5), 849-868, DOI: doi:10.12989/sss.2014.13.5.000, 2014.

Chen, S., F. Cerda, P. Rizzo, J. Bielak, J. H. Garrett, and J. Kovačević, " Semi-supervised multiresolution classification using adaptive graph filtering with application to indirect bridge structural health monitoring," *IEEE Transactions of Signal Processing*, 62, 2879-2893, 2014.

Chen, S., A. Sandryhaila, G. Lederman, Z. Wang, J. M. F. Moura, P. Rizzo, J. Bielak, J.H. Garrett, and J. Kovačević, "Signal inpainting on graphs via total variation minimization," *Proc. ICASSP2014* (accepted).

Lederman, G., Z. Wang, J. Bielak, H. Noh, J.H. Garrett, S. Chen, J. Kovačević, F. Cerda, and P. Rizzo, "Damage quantification and localization algorithms for indirect SHM of bridges," *Proc.* IABMAS 2014, *Bridge Maintenance, Safety, Management and Life Extension*, Airong Chen, Dan M. Frangopol, and Xian Ruan, Eds., CRC Press, 640-647, doi: 10.1201/b17063-93, 2014.

Taborda, R. and J. Bielak, "Ground-motion simulation and validation of the 2008 Chino Hills, California, earthquake using different velocity models," *Bulletin of the Seismological Society of America,* 104, 1876–1898, doi: 10.1785/0120130266, 2014.

Hagstrom, T., D. Givoli, D. Rabinovich, and J. Bielak, "The Double Absorbing Boundary method," *Journal of Computational Physics*, 259, 220-241, 2014

S. Chen, F. Cerda, J. Guo, J. B. Harley, Q. Shi, P. Rizzo, J. Bielak, J. H. Garrett, and J. Kovačević, "Multiresolution classification with semi-supervised learning for indirect bridge structure health monitoring," *Proc. IEEE Int. Conf. Acoust., Speech Signal Process.*, Vancouver,

Canada, May 2013.

Wang, Z., S. Chen, G. Lederman, F. Cerda, J. Bielak, J.H. Garrett, P. Rizzo, and J. Kovačević, "Comparison of sparse representation and Fourier discriminant methods: Damage location classification in indirect lab-scale bridge structural healt monitoring," *Proc. Structures Congr., ASCE*, Pittsburgh, PA, May 2013.

Rabinovich, D., D. Givoli, T. Hagstrom, and J. Bielak, "Stress-velocity complete radiation boundary conditions," *Journal of Computational Acoustics* 21, 15-57, 2013.

Kallivokas, L.F., A. Fathi, S. Kucukcoban, K.H. Stokoe II, J. Bielak, and O. Ghattas, "Site characterization using full waveform inversion," *Soil Dynamics and Earthquake Engineering*, 47, 62-82, 2013.

Jarenprasert S, E. Bazan-Zurita, and J. Bielak, "Seismic soil-structure interaction response of inelastic structures," *Soil Dynamics and Earthquake Engineering*, 47, 132-143, 2013.

Taborda, R. and J. Bielak, "Short-period ground-motion simulation and validation of the 2008 Chino Hills earthquake," *Bulletin of the Seismological Society of America*, 103, 131-156, doi: 10.1785/01201/10325, 2013.

Taborda, R., J. Bielak, and D. Restrepo, "Earthquake ground motion simulation including nonlinear soil effects under idealized conditions with application to two case studies," *Seismological Research Letters*, 83, 1047-1060, doi:10.1785/0220120079, 2012.

Cerda, F., J. Garrett , J. Bielak , P. Rizzo , J. Barrera , Z. Zhuang , S. Chen , M. McCann & J. Kovačević. "Indirect structural health monitoring in bridges: scale experiments," *Proceedings of the Sixth International Conference on Bridge Maintenance, Safety and Management*, IABMAS2012, Villa Erba, Lake Como, Italy (fully reviewed), 2012.

Papalou, A., J. Bielak, and E. Bazan, "Effects of isolated spread footings on the dynamics of soil-structure interaction," *Journal of Geoenvironmental and Geotechnical Engineering, ASCE,* 138 (8), 1033-1036, 2012.

Bazan-Zurita, E., S. Jarenprasert, C. Bazan-Arias, and J. Bielak, "Effects of uncertain soil properties on the inelastic seismic response of building-foundation systems," *Proceedings of the Fifth Asian-Pacific Symposium on Structural Reliability and its Applications (5APSSRA)*. 23-25 May 2012, Singapore, K.K. Phoon, M. Beer, S.T., Quek, and S.D. Pang (eds.) (fully reviewed), 2012.

Baffet, D., J. Bielak, D. Givoli, T. Hagstrom, and D. Rabinovich, "Long-time stable high-order absorbing boundary conditions for elastodynamics, *Computer Methods in Applied Mechanics and Engineering*, 241-244, pp. 20-37, 2012.

Bielak, J., H. Karaoglu, and R. Taborda, "Memory-efficient displacement-based internal friction for wave propagation simulation," *Geophysics,* 76, T131 – T145, doc 10.1190/geo2011-0019.1, 2011.

Restrepo, D., R. Taborda, and J. Bielak, "Effects of soil nonlinearity on ground response in 3D simulations – an application to the Salt Lake City Basin, Proceedings of the *4th IASPEI / IAEE*

International Symposium: Effects of Surface Geology on Seismic Motion, August 23–26, 2011, University of California Santa Barbara (fully reviewed) .

Taborda, R. and J. Bielak, "Full 3D integration of site-city effects in regional scale earthquake simulations," *Proceedings of the 8th International Conference on Structural Dynamics, EURODYN 2011*, 511-518, Leuven, Belgium, 4-6 July 2011, G. De Roeck, G. Degrande, G. Lombaert, and G. Müller (eds.) (fully reviewed).

Taborda, R. and J. Bielak, "Large-scale earthquake simulations: Computational seismology and complex engineering systems," *Computing in Science & Engineering,* 13, 14-26, 2011.

Rabinovich, D., D. Givoli, J. Bielak, and T. Hagstrom, "A finite element scheme with a high order absorbing boundary condition for elastodynamics," *Computer Methods in Applied Mechanics and Engineering*, 200, 2048-2066, doi:10.1016/j.cma.2011.03.006, 2011.

Askan, A., V. Akcelik, J. Bielak, and O. Ghattas, "Parameter Sensitivity Analysis of a Nonlinear Least Squares Optimization-based Anelastic Full Waveform Inversion Method," *Comptes Rendus Mechanique*, 338, 364-376, 2010.

Goto, H., L. Ramírez-Guzmán, and J. Bielak, "Simulation of spontaneous rupture based on a combined boundary integral equation method and finite element method approach: SH and P-SV cases," *Geophysical Journal International* 183, 975-1004, 2010.

Bielak, J., "Viscoelastic Waves in Layered Media*,* by R. D. Borcherdt," *Earthquake Spectra,* 26, 901-903 (Book Review), 2010.

López, J., L. Ramírez, J. Bielak, and D. O´Hallaron, "BEMC: A searchable compressed representation for seismic wavefields," *Proceedings of the 22nd International Conference on Scientific and Statistical Database Management,* Springer, June 300-July 2, 2010, Heidlberg, Germany.

Cerda, F., J. Garrett, J. Bielak, R. Bhagavatula & J. Kovačević, "Exploring indirect vehicle-bridge interaction for bridge SHM," Proceedings of IABMAS2010, *5th International Conference on Bridge Maintenance, Safety and Management*, July 11-15, 2010, Philadelphia, PA.

Yi, H., J. Bielak, and L.F. Kallivokas, "A mixed symmetric BEM for multi-domain, multi-material, and crack interface problems in elastostatics," *Recent Developments in Boundary Elements, E.J. Sapountzakis, ed*, WIT Press, 349-363, 2010.

Bazán-Zurita, E., J. Bielak, A. M. DiGioia, Jr., and S. Jarenprasert, "Seismic design of substation structures," *Proceedings of the 2009 Electrical Transmission and Substation Structures Conference*, ASCE, Nov. 8-12, Fort Worth, TX, 2010.

Donald E. Shaw, James H. Garrett Jr., Jacobo Bielak, and Fernando Cerda, "A holistic approach to Structural Health Monitoring of bridges", *Proceedings of the 2009 International Bridge Conference*, June 15-17, 2009 Pittsburgh PA.

Bielak, J., R.W. Graves, K.B. Olsen, R. Taborda, L. Ramírez-Guzmán, S.M. Day, G.P. Ely, D. Roten, T.H. Jordan, P.J. Maechling, J. Urbanic, Y. Cui, G. Juve, "The ShakeOut earthquake scenario: Verification of three simulation sets," *Geophysical Journal International*, 180, 375-404, doi: 10.1111/j.1365-246X.2009.04417x, 2009.

Ichimura, T., M. Hori, and J. Bielak, "A hybrid multiresolution meshing technique for finite element three-dimensional earthquake ground motion modeling in basins including topography," *Geophysical Journal International,* 177, 1221-1232, doi: 10.1111/j.1365-246X.2009.04154.x, 2009.

Askan, A. and J. Bielak, "Full Anelastic Waveform Tomography Including Model Uncertainty," *Bull. Seism. Soc. Am.*, 98, 2975-2989, 2008.

Schlosser, S.W., M.P. Ryan, R. Taborda, J. López, D.R. O'Hallaron, and J. Bielak, "Materialized community ground models for large-scale earthquake simulations," *Proc. ACM/IEEE SC2008*, Austin, TX, 2008.

Zhang, Y., J. P. Conte, Z. Yang, A. Elgamal, J. Bielak, and G. Acero, "Two-dimensional nonlinear earthquake response analysis of a bridge-foundation-ground system," *Earthquake Spectra,* 24, 343-386, 2008.

Goto, H. and J. Bielak, "Galerkin boundary integral equation method for spontaneous rupture propagation problems: SH-case," *Geophysical Journal International,* 172, 1083-1103, doi:10.1111/j.1365-246X.2007.03694.x, 2008.

Day, S. M., R. W. Graves, J. Bielak, D. Dreger, S. Larsen, K. B. Olsen, A. Pitarka, and L. Ramirez-Guzman, "Model for basin effects on long-period response spectra in southern California," *Earthquake Spectra*, 24, 257-277, 2008.

Epanomeritakis, I., V. Akcelik, O. Ghattas, and J. Bielak, "A Newton-CG method for large-scale three-dimensional elastic full-waveform inversion," *Inverse Problems,* 24, 034015 (26pp) doi: 10.1088/0266-5611/24/3/034015, 2008.

Jarenprasert, S., E. Bazan, and J. Bielak, "On the seismic desisng of inelastic asymmetric buildings," *Proc. 14th World Conf. Earthq. Eng*., Paper ID 08-02-0017, Beijing, China, Oct. 12-17, 2008.

Onur, T., L. Ramirez-Guzman, J. Bielak, M. Contreras, M. Masuda, H. Juarez, and J. Aguirre., "Use of 3-D ground motion simulations in estimating future economic loss in Mexico City," *Proc. 14th World Conf. Earthq. Eng*., Paper ID 10-0062, Beijing, China, Oct. 12-17, 2008.

Goto, H., L. Ramirez-Guzman, and J. Bielak, "Numerical simulation of dynamic fault rupture propagation based on a combination of BIEM and FEM solutions," *Proc. 14th World Conf. Earthq. Eng*., Paper ID 03-01-0004, Beijing, China, Oct. 12-17, 2008.

Askan, A., V. Akcelik, J. Bielak, and O. Ghattas, "Full waveform inversion for seismic velocity and anelastic losses in heterogeneous structures," *Bull. Seism.Soc. Am.* , 97, 1990-2008, 2007.

Ramírez-Guzmán, L. and J. Bielak, "Three-dimensional simulation of long-period (>1.5 sec) earthquake ground motion in the Valley of Mexico: Basin effects," Proc. 4th International Conference on Earthquake Geotechnical Engineering, Thessaloniki, Greece , 2007.

A. Fernández-Ares and J. Bielak, "Urban Seismology: Interaction between earthquake ground motion and multiple buildings in urban regions," *Proc. Third International Symposium on the*

Effects of Surface Geology on Seismic Motion, 87-96, Laboratoire Central de Ponts et Chaussees, Grenoble, (Keynote paper), 2006.

S. Jarenprasert, E. Bazan, and J. Bielak, "Inelastic spectrum-based approach for seismic design spectra," *ASCE Journal of Structural Engineering*, 132, 1284-1292, 2006.

T. Tu, H. Yu, L. Ramírez-Guzman, J. Bielak, O. Ghattas, K-L Ma, and D.R. O'Hallaron, "From Mesh Generation to Scientific Visualization: An End-to-End Approach to Parallel Supercomputing," *Proc. ACM/IEEE SC2006*, Tampa, FL (Best Student Paper Finalist), 2006.

T. Tu, H. Yu, J. Bielak, O. Ghattas, J. C. Lopez, K-L. Ma, D. R. O'Hallaron, L. Ramirez-Guzman, N. Stone, R. Taborda-Rios, J. Urbanic," Remote Runtime Steering of Integrated Terascale Simulation and Visualization." *Proc. ACM/IEEE SC2006*, Tampa, FL (HPC Analytics Challenge Award), 2006.

S. Day, J. Bielak, D. Dreger, R. Graves, S. Larsen, K.B. Olsen, A. Pitarka, and L. Ramirez, "Numerical simulation of basin effects on long-period ground motion," *Proc. Eighth National Conference on Earthquake Engineering*, San Francisco, CA, 2006.

J. Bielak, O. Ghattas, and E-J. Kim, "Parallel Octree-Based Finite Element Method for Large-Scale Earthquake Ground Motion Simulation," *Computer Modeling in Engineering and Science*, 10, 99-112, 2005.

L. F. Kallivokas, T. Juneja, and J. Bielak, "A symmetric Galerkin BEM variational framework for multi-domain interface problems," *Computer Methods in Applied Mech.& Eng*., 194, 3607-3636, 2005.

J. Bielak, Reply to "Comment on 'Domain Reduction Method for Three-Dimensional Earthquake Modeling in Localized Regions, Part I: Theory,' by J. Bielak, K. Loukakis, Y. Hisada, and C. Yoshimura, and 'Part II: Verification and Applications," by C. Yoshimura, J. Bielak, Y. Hisada, and A. Fernández," by E. Faccioli, M. Vanini, R. Paolucci, and M. Stupazzini, *Bull. Seism Soc. Am.,* 95, 770-773, 2005.

V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, O. Ghattas, L.F. Kallivokas, and E. J. Kim, "Towards dynamic data driven inversion-based site characterization," Book chapter in *Data Driven Application Systems*, F. Darema (ed.), Kluwer Academic Publishers, 2005.

J. Bielak, A. Askan, A. Fernández, G. L. Fenves, B. Stojadinovic, J. Park, G. Petropoulos, T. Haput, R. King, and J. Meyer, "Simulations for determining the seismic performance of urban regions," *Eurodyn 2005,* Paper 208, *Proc. Sixth European Conference on Structural Dynamics,* (Invited), September 2005.

V. Akcelik, J. Bielak, I. Epanomeritakis, and O. Ghattas, "High-resolution forward and inverse modeling of earthquake wave propagation in large basins," *Eurodyn 2005,*Paper 207, *Proc. Sixth European Conference on Structural Dynamics,* (Invited), September 2005.

A. Papalou and J. Bielak, "Dam-canyon interaction effects in nonlinear seismic response of earth dams," *ASCE J. Geotech. Geoenv. Engrg*., 130, 103-110, 2004.

Minster, J., K. B. Olsen, R. Moore, S. Day, P. Maechling, T. Jordan, M. Faerman, Y. Cui, G. Eli, Y. Hu, B. Shkoller, C. Marcinkovich, J. Bielak, D. Okaya, R. Archuleta, N. Wilkins-Diehr, S.

Cutchin, A. Chourasia, G. Kremenk, A. Jagatheesan, L. Brieger, A. Majundar, G. Chukkapalli, Q. Xin, B. Banister, D. Thorp, P. Kovatch, L. Diegel, T. Sherwin, C. Jordan, M. Thiebaux, and J. López, "The SCEC TeraShake earthquake simulation," *Eos Trans. AGU,* 85(47), Fall Meet. Suppl., Abstract SF31B-05, 2004.

Day, S. M., J. Bielak, D. Dreger, R. Graves, S. Larsen, K. B. Olsen, A. Pitarka, and L. Ramírez, "Source-averaged basin effects from 3D ground motion simulations," *Eos Trans. AGU,* 85(47), Fall Meet. Suppl., Abstract S22B-06, 2004.

A. Askan and J. Bielak, "A hybrid method for the generation of broadband ground motions," *Eos Trans. AGU,* 85(47), Fall Meet. Suppl., Abstract S31A-1029, 2004.

A. Akcelik, J. Bielak, I. Epanomeritakis, and O. Ghattas, "High-resolution inverse-based determination of seismic-velocity structure in basins," *Eos Trans. AGU,* 85(47), Fall Meet. Suppl., Abstract S11D-04, 2004.

Y. Hisada and J. Bielak, "Effects of sedimentary layers on directivity pulse and fling step," Proc. *13th World Conference on Earthquake Engineering*, Paper No. 1736, Vancouver, Canada, August, 2004.

A. Fernández-Ares and J. Bielak, "Interaction between earthquake ground motion and multiple buildings in urban regions," *Proc. 3rd U.S.—Japan Cooperative Program on Natural Resources (UJNR) Workshop on Soil-Structure Interaction*, Menlo Park, CA, March 2004.

V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, O. Ghattas, and L. K. Kallivokas, "A framework for online inversion-based 3D site characterization*," Proc. Int. Conf. on Comput. Science*, Krakow, Poland, June 2004.

V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, O. Ghattas, L.F. Kallivokas, and E. J. Kim, "An online framework for inversion-based 3D site characterization," *Lecture Notes in Computer Science*, Computational Science, **3038/2004**, 717–724, 2004

V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, A. Fernández, O. Ghattas, E. J. Kim, J. López, D. O'Hallaron, T. Tu, and J Urbanic, "High-resolution forward and inverse earthquake modeling on terascale computers," *Proc. ACM/IEEE SC2003*, Phoenix, AZ, (Gordon Bell Prize) 2003.

K-L. Ma, A. Stompel, J. Bielak, O. Ghattas, and E. J. Kim, "Visualizing large-scale earthquake simulations," *Proc. of ACM/IEEE SC2003*, Phoenix, AZ, 2003.

J. P. Stewart, S. Kim, J. Bielak, R. Dobry, and M. Power, "Revisions to SSI (soils-structure-interaction) proceodures in NEHRP (National Earthquake Hazard Reduction Program) design provisions," *Earthquake Spectra*, 19, 677-696, 2003.

E. Kim, J. Bielak, and O. Ghattas, "Large-scale Northridge earthquake simulation using octree-based multiresolution mesh method, *Proc. 16th ASCE Eng. Mech. Conf.* Seattle, WA, July 2003.

Y. Zhang, Z. Yang, J. Bielak, J. P. Conte, and A. Elgamal, "Treatament of seismic input and boundary conditions in nonlinear seismic analysis of a bridge ground system," *Proc. 16th ASCE Eng. Mech. Conf*,. Seattle, WA, July 2003

Z. Yang, L. He, J. Bielak, Y. Zhang, and A. Elgamal, Nonlinear seismic response of a bridge site subjected to spatially varying ground motion, *Proc. 16th ASCE Engineerng Mechanics Conference*, Seattle, WA, July 2003.

J. Bielak, K. Loukakis, Y. Hisada, and C. Yoshimura, "Domain reduction method for three-dimensional earthquake modeling in localized regions. Part I: Theory," *Bull. Seism. Soc. Am.* 93, 817-824, 2003.

C. Yoshimura, J. Bielak, Y. Hisada, and A. Fernández, "Domain reduction method for three-dimensional earthquake modeling in localized regions. Part II: Verification and Applications," *Bull. Seism. Soc. Am*. 93, 825-840, 2003.

Y. Hisada and J. Bielak, "A theoretical method for computing near-fault ground motions in layered half-spaces considering static offset due to surface faulting – with physical interpretation of the fling step and rupture directivity," *Bull. Seism. Soc. Am.* 93, 1154-1168, 2003.

J. Xu, J. Bielak, O. Ghattas, and J. Wang, "Three-dimensional nonlinear seismic ground motion modeling in basins," *Physics of the Earth and Planetary Interiors*, 137, 81-95, 2003.

E. Kim, J. Bielak, O. Ghattas, and J. Wang, "Octree-based finite element method for large-scale earthquake ground motion modeling in heterogeneous basins," *Eos Trans. AGU,* 83 (47), Fall Meet. Suppl., Abstract S12B-1221, 2002.

L. Kallivokas, T. Juneja, and J. Bielak, "On a symmetric Galerkin BEM formulation for multi-domain interface problems," *Proc. 4th GRACM Congress on Comput. Mech.,* Patra, Greece, 27-29 June, 2002.

J. Bielak and Y. Hisada, "An efficient method for computing strong ground motions in a layered half-space considering static dislocations," *Eos Trans. AGU*, 82(47), Fall Meet. Suppl., Abstract S32-11, 2001.

C. Yoshimura, J. Bielak, and Y. Hisada, "Domain reduction method for three-dimensional earthquake modeling in localized regions," *Eos Trans. AGU*, 82(47), Fall Meet. Suppl., Abstract S42C-0669, 2001.

A. Papalou and J. Bielak, "Dam-canyon interaction effects in elastic seismic response of earth dams," *ASCE J. Geotechn & Geoenv. Eng.*., 127, May 2001.

E. Bazan, S. Jarenprasert, and J. Bielak, "SSI with nonlinear structural behavior," *Proc. 2nd US-Japan Workshop on Soil-Structure Interaction*, Tsukuba, Japan, March 2001.

J. Bielak, Y. Hisada, H. Bao, J. Xu, and O. Ghattas, "One- vs two- or three-dimensional effects in sedimentary valleys," *Proc. 12th World Conference on Earthquake Engineering*, Auckland, New Zealand, February 2000.

J. Bielak, J. Xu, and O. Ghattas, "Earthquake ground motion and structural response in alluvial valleys," *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 125, 413-423, 1999.

E. Bazan-Zurita, N.C. Bazan-Arias, and J. Bielak, "Three-dimensional seismic response of building-foundation systems," *Proceedings of the United States-Japan Workshop on Soil-*

Structure Interaction, Menlo Park, CA, Sept. 22-23, U.S. Geological Survey, Open-File Report 99-142 (M. Celebi and I. Okawa, eds), 1999.

J. Bielak, C. Felippa, G.L. Fenves, and K.D. Mish, "Model-Based Simulation (MBS) for Civil and Mechanical Systems: White Paper," Final document of Workshop on Model-Based Simulation organized by the Division of Civil and Mechanical Systems, National Science Foundation, June 24-25, 1999.

J. Bielak, H. Bao, and O. Ghattas, "Characterizing site effects in large basins during earthquakes," *Proceedings of the 12th ASCE Engineering Mechanics Conference*, May 17-20, 1998, La Jolla, CA.

J. Bielak, H. Bao, and O. Ghattas, "Ground motion modeling using 3D finite element methods," *The Effects of Surface Geology on Seismic Motion*, K. Irikura, K. Kudo, H. Okada, and T. Sasatani (eds), Vol 1, 121-133, Balkema, 1998.

Y. Hisada, H. Bao, J. Bielak, O. Ghattas, and D.R. O'Hallaron, "Simulations of long-period ground motions during the 1995 Hyogoken-Nambu (Kobe) Earthquake using 3D finite element method*," 2nd International Symposium on the Effect of Surface Geology on Seismic Motion, Special Volume on Simultaneous Simulation for Kobe*, 59-66, Yokohama, Japan, 1-3 December, 1998.

J. Bielak and O. Ghattas, "Challenges in Computational Seismology," invited paper prepared on the occasion of the National Workshop on Advanced Scientific Computing (one portion is included in the final workshop report), July 30-31, 1998, National Academy of Sciences, Washington, D.C.

E. Bazan-Zurita, N.C. Bazan-Arias, and J. Bielak, "Three-dimensional seismic response of building-foundation systems," *Proceedings of the Structural Engineers World Congress*, July 18-23, 1998, San Francisco, CA.

H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J. Shewchuk, and J. Xu, "Large-scale simulation of elastic wave propagation in heterogeneous media on parallel computers," *Computer Methods in Applied Mechanics and Engineering*, Vol. 152, pp. 85-102, 1998.

L.F. Kallivokas, J. Bielak, and R.C. MacCamy, "A simple impedance-infinite element for the finite element solution of the three-dimensional wave equation in unbounded domains," *Computer Methods in Applied Mechanics and Engineering*, Vol. 147, pp. 235-262, 1997.

L.F. Kallivokas, A. Tsikas, and J. Bielak, "On transient three-dimensional absorbing boundary conditions for the modeling of acoustic scattering from near-surface obstacles," *Journal of Computational Acoustics*, Vol. 5, pp.117-136, 1997.

L.F. Kallivokas, J. Bielak, and R.C. MacCamy, "Absorbing boundaries of arbitrary shape for the three-dimensional wave equation," *Proceedings of the International Union of Theoretical and Applied Mechanics (IUTAM) Symp. On Computational Methods for Unbounded Domains*, University of Colorado at Boulder, July 27-31, 1997.

J. Bielak, L.F. Kallivokas, R.C. MacCamy, "Absorbing boundaries of acoustic wave propagation problems," *Proceedings of the International Union of Theoretical and Applied Mechanics*

(IUTAM) Symp. on Computational Methods for Unbounded Domains, University of Colorado at Boulder, July 27-31, 1997.

H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J.R. Shewchuk, and J. Xu, "Earthquake ground motion modeling on parallel computers," in *Proceedings of 1996 AMC/IEEE Supercomputing Conference.*

J. Bielak, O. Ghattas, T.R. Gross, and D.R. O'Hallaron, "Strategic research directions in earthquake ground motion modeling on parallel computers," (invited position paper) in *Proceedings of Association for Computing Machinery Workshop on Strategic Directions in Computing Research*, MIT, Cambridge, June 14-15, 1996.

F.J. Sanchez-Sesma, R. Benites, and J. Bielak, "The assessment of strong ground motion – what lies ahead?", Paper 2014 in *Proceedings of the 11th World conference on Earthquake Engineering*, Acapulco, Mexico, June 23-28, 1996.

J. Bielak, W.D. Iwan, H. Kawase, K. Kudo, and F.J. Sanchez-Sesma, "The effects of surface geology on strong ground motion – an introduction to a special theme session," Paper 2026 in *Proceedings of the 11th World Conference on Earthquake Engineering*, Acapulco, Mexico, June 23-28, 1996.

A. Papalou and J. Bielak, "Seismic interaction effects in earth and rockfill dams," Paper 2084 in *Proceedings of the 11th World Conference on Earthquake Engineering*, Acapulco, Mexico, June 23-28, 1996.

Kallivokas, L.F. and J. Bielak, "A time-domain impedance element for FEA of axisymmetric exterior structural acoustics," *ASME Journal of Vibration and Acoustics*, Vol. 117, pp.145-151, 1995.

K. Loukakis and J. Bielak, "Seismic response of two-dimensional sediment-filled valleys to oblique incident SV-waves calculated by the finite element method," *Proceedings of the Fifth U.S. National Conference on Earthquake Engineering*, July 10-14, 1994, Chicago, IL, Vol. III, pp. 25-34.

K. Loukakis and J. Bielak, "Layering and damping effects on seismic response of sedimentary valleys to oblique excitation," *Proceedings of the Second International Conference on Earthquake Resistant Construction and Design*, June 15-17, 1994, Berlin, Germany, pp. 93-100.

X. Zeng and J. Bielak, "Stable symmetric finite element-boundary integral coupling methods for fluid-structure interface problems," *Engineering Analysis with Boundary Elements*, Vol. 15, pp. 79-91, 1995.

K.E. Loukakis and J. Bielak, "Layering and damping effects on seismic response of sedimentary valleys to oblique excitation," *Proceedings of the 3rd International Conference on Recent Advances in Geotechnical Engineering & Soil Dynamics*, St. Louis, MO, April 1995.

J. Bielak, R.C. MacCamy, and X. Zeng, "Stable coupling methods for interface scattering problems by combined integral equations and finite elements," *Journal of Computational Physics*, Vol. 119, pp. 374-384, 1995.

J. Bielak, L.F. Kallivokas, J. Xu, and R. Monopoli, "Finite element absorbing boundary for the wave equation in a halfplane with an application to engineering seismology," *Proceedings of the Third International conference on Mathematicl and Numerical Aspects of Wave Propagation (INRIA-SIAM*, pp. 489-498, Mandelieu-la-Napule, France, April, 1995.

L.F. Kallivokas and J. Bielak, "Transient and time-harmonic infinite elements for near-surface computations of three-dimensional structures submerged in a half-space," *Proceedings of the 1995 ASME Design Engineering Technical Conference*, DE-Vol. 84-2, Vol. 3 – Part B, 129-140, Boston, MA, September 1995.

E. Bazan-Zurita and J. Bielak, "Seismic response of elastic building-foundation systems," *Proceedings of the Eighth International Conference for Computer Methods and Advances in Geomechanics*, Vol. 2, pp. 293-301, Morgantown, WV, May 25-27, 1994.

X. Li, J. Bielak, and O. Ghattas, "Seismic response in three dimensional basin on a CM-2," *Proceedings of the Eighth International Conference on Recent Advances in Geomechanics*, Vol. 2, pp. 204-212, Morgantown, WV, May 25-27, 1994.

X. Zeng, and J. Bielak, "Stability assessment of a unified variation boundary integral method applicable to thin scatters and scatters with corners," *Computer Methods in Applied Mechanics and Engineering*, Vol. 111, pp. 127-142, 1994.

X. Zeng and J. Bielak, "Exterior stable domain segmentation integral equation method for scattering problems," *International Journal for Numerical Methods in Engineering*, Vol. 37, pp. 777-792, 1994.

L.F. Kallivokas, and J. Bielak, "An element for the analysis of transient exterior fluid-structure interaction problems using the FEM," *Finite Elements in Analysis and Design*, Vol. 15, pp. 69-81, 1993.

L.F. Kallivokas and J. Bielak, "Time-domain analysis of transient structural acoustics problems based on the finite element method and a novel absorbing boundary element," *Journal of the Acoustical Society of America*, Vol. 94, pp. 3480-3492, 1993.

X. Zeng, L.F. Kallivokas, and J. Bielak, "A symmetric variational finite element boundary integral equation coupling method," *Computers & Structures*, Vol. 46, pp. 995-1000, 1993.

X. Zeng, J. Bielak, and R.C. MacCamy, "Unified Symmetric Finite Element and Boundary Integral Variational Coupling Methods for Linear Fluid-Structure Interaction," *Numerical Methods for Partial Differential Equations*, Vol.8, pp. 451-467, 1992.

X. Zeng, L.F. Kallivokas and J. Bielak, "Stable Localized Symmetric Integral Equation Method for Acoustic Scattering Problems," *Journal of the Acoustical Society of America*, Vol. 91, pp.2510-2518, 1992.

X. Li, J. Bielak, and O. Ghattas, "Three dimensional earthquake site response on a CM-2," *Proceedings of the Tenth World Conference on Earthquake Engineering*, pp. 959-964, Madrid, Spain, July 19-24, 1992.

M. Eisenberger and J. Bielak, "Finite beams on infinite two-parameter elastic foundations," *Computers & Structures*, Vol. 42, 99. 661-664, 1992.

E. Bazan-Zurita, J. Bielak, I. Diaz-Molina and M.C. Bazan-Arias, "Probabilistic Seismic Responses of Inelastic Building-Foundation Systems," *Proceedings of the Tenth World Conference on Earthquake Engineering*, pp. 1559-1575, Madrid, Spain, July 19-24, 1992.

X. Zeng, J. Bielak, and R.C. MacCamy, "Stable Coupling Methods for Fluid-Structure Interaction in Semi-Infinite Media," *ASME Journal of Vibration and Acoustics*, Vol. 114, pp. 387-396, 1992. Also in *Structural Acoustics*, ASME NCA/AMD, Vol. 12 and Vol. 128, pp. 243-250, 1991.

J. Bielak and R.C. MacCamy, "Symmetric Finite Element and Boundary Integral Coupling Methods for Fluid-Solid Interaction," *Quarterly of Applied Mathematics*, Vol. 49, pp. 107-119, 1991.

A.M. Trochanis, J. Bielak, and P. Christiano, "Three-Dimensional Nonlinear Study of Piles," *ASCE Journal of Geotechnical Engineering*, Vol. 117, 99. 429-447, 1991.

A.M. Trochanis, J. Bielak, and P. Christiano, "A Simplified Model for Analysis of One or Two Piles," ASCE *Journal of Geotechnical Engineering*, Vol. 20, pp. 448-466, 1991.

T.J. Siller, P. Christiano, and J. Bielak, "Seismic Response of Tie-Back Walls," *Earthquake Engineering and Structural Dynamics*, Vol. 20, 99. 605-620, 1991.

A.M. Trochanis, J. Bielak, and P. Christiano, "Three-Dimensional Nonlinear Study of Piles and Simplified Models," *Proceedings of ASCE Geotechnical Engineering Congress*, Vol. 1, pp. 356-366, Boulder, CO, June 9-12, 1991.

L.F. Kallivokas, J. Bielak, and R.C. MacCamy, "Symmetric Local Abosorbing Boundaries in Time and Space," *ASCE Journal of Engineering Mechanics*, Vol. 117, pp. 2027-2048, 1991.

J. Bielak, R.C. MacCamy, D.S. McGhee, and A. Barry, "Unified Symmetric BEM-FEM for Site Effects on Ground Motion - - SH-waves," *ASCE Journal of Engineering Mechanics*, Vol. 117, pp. 2265-2285, 1991.

I. Diaz-Molina, E. Bazan , and J. Bielak, "Dynamic Torsional Behavior of Inelastic Systems," *Proceedings of the 11th International Conference on Structural Mechanics in Reactor Technology*, Vol. 12, pp. 375-389, Tokyo, Japan, October 1991.

X. Zeng, J. Bielak, and P. Christiano, "Analysis of Third-Octave Mode Chatter in the Cold Rolling of Steel," Research Report R-90-192, Dept. of Civil Engineering, Carnegie Mellon University, October, 1990.

J. Bielak, and R.C. MacCamy, "Dissipative Boundary Conditions for One-Dimensional Wave Propagation," *Journal of Integral Equations and Applications*, Vol. 2, pp. 1-25, 1990.

M. Eisenberger and J. Bielak, "Remarks on Two Papers Dealing with the Response of Beams on Two-Parameters Elastic Foundations," *Earthquake Engineering and Structural Dynamics*, Vol. 18, No. 7, pp. 1077-1078, 1989.

X. Zeng and J. Bielak, "Development of a Three-Dimensional Finite Element for the Analysis of Tempering Stresses for Viscoelastic Materials with Structural Relaxation," Report R-89-180, Department of Civil Engineering, Carnegie Mellon University, August 1989.

J. Bielak, and R.C. MacCamy, "On the Strength of Mechanical and Thermal Damping in Linear Materials," *Quarterly of Applied Mathematics*, Vol. 47, No. 3, pp. 55-570, 1989.

S.T. Hsu, J.H. Griffin, and J. Bielak, "On How Gravity and Joint Scaling Affect the Dynamic Response of Jointed Structures," *AIAA Journal*, Vol. 27, No. 9, pp. 1280-1287.

E. Bazan-Zurita, J. Bielak, and N.R. Vaidya, "Three-Dimensional Model Seismic Analysis of Buildings," *Proceedings of the ASME PVP Conference*, Honolulu, Hawaii, July, 1989.

E. Bazan and J. Bielak, "Inelastic Torsional Response of Soil-Structure Interaction Systems," Structural Dynamics and Soil Structure Interaction, (Eds: A.S. Cakmak and I. Herrera) *Proceedings of the 4th International Conference on Soil Dynamics and Earthquake Engineering*, pp. 181-191, Mexico City, Mexico, October 1989.

J. Bielak, E. Bazan, and L.B. Doo, "Earthquake Response of Simple Degrading Structures Supported on Flexible Soils," *Proceedings of the 9th World Conference on Earthquake Engineering*, Vol. 5, pp. 135-140, Tokyo-Kyoto, Japan, August, 1988.

M.C. Cremonini, P. Christiano, and J. Bielak, "Implementation of Effective Seismic Input for Soil-Structure Interaction Systems," *Earthquake Engineering and Structural Dynamics*, Vol. 16, 99. 615-625, 1988.

A. Barry, J. Bielak, and R.C. MacCamy, "On Absorbing Boundary Conditions for Wave Propagation," *Journal of Computational Physics*, Vol. 79, pp. 449-468, 1988.

J. Bielak, R.C. MacCamy, and A.M. Trochanis, "On Time Domain Absorbing Boundaries for Wave Propagation Problems with Nonlinearities," *Computational Mechanics, "88 Theory and Applications*, (S.N. Atluri, G. Yagawa, Eds.), Vol. 1, pp.4ii-4ii4, Springer Verlag, 1988.

G.A. Foelsche, J.H. Griffin, and J. Bielak, "Transient Response of Joint Dominated Space Structures: A New Linearization Technique," *AIAA Journal*, Vol. 26, pp. 1278-1285, 1988.

T.J. Siller, P.P. Christiano, and J. Bielak, "On the Dynamic Behavior of Tied-Back Retaining Walls," *Structures and Stochastic Methods* (A.S. Cakmak, Ed.) Developments in Geotechnical Engineering, Vol. 45, pp. 141, 150, Elsevier Science Publishers B.V., 1987.

E. Bazan and J. Bielak, "Earthquakes Response of Nonlinear Building-Foundation Systems," *Soil-Structure Interaction* (A.S. Cakmak, Ed.) Developments in Geotechnical engineering, Vol. 43, pp. 13-24, Elsevier Science Publishers B.V., 1987.

A.M. Trochanis, R. Chelliah, and J. Bielak, "Unified Approach for Beams on Elastic Foundations Under Moving Loads," *ASCE Journal of Geotechnical Engineering*, Vol. 113, No. 8, pp. 879-895, 1987.

A.M. Trochanis, J. Bielak, and P.P. Christiano, "On Hysteretic Dissipation of Piles Under Cyclic Axial Load," *ASCE Journal of Geotechnical Engineering*, Vol. 113, pp. 335-350, 1987.

R.H. Allen, I.J. Oppenheim, A.R. Parker, and J. Bielak, "On the Dynamic Response of Rigid Body Assemblies," *Earthquake Engineering and Structural Dynamics*, Vol. 14, pp. 861-876, 1986.

E. Bazan, J. Bielak and J.H. Griffin, "An Efficient Method for Predicting the Vibratory Response of Linear Structures with Friction Interfaces," *ASME Journal of Engineering for Gas Turbines and Power*, Vol. 108, pp. 633-640, 1986.

T.J. Siller, P. Christiano, and J. Bielak, "The Nonlinear Seismic Response of Retaining Walls," *Proceedings of the 3rd US National Conference on Earthquake Engineering*, Vol. I, pp. 599-610, Charleston, SC, 1986.

J. Bielak, H. Sudarbo and D.V. Morse, "Coupled Lateral-Rocking-Torsional Response of Structures with Embedding foundations due to SH-Waves," *Proceedings of the 3rd US National Conference of Earthquake Engineering*, Vol.I, pp. 811-822, Charleston, SC, 1986.

C.H. Menq, J. Bielak, and J.H. Griffin, "The Influence of Microslip on Vibratory Response; Part 1: A New Microslip Model," *Journal of Sound and Vibration*, Vol. 107, pp. 279-293, 1986.

C.H. Menq, J.H. Griffin, and J. Bielak, "The Influence of Microslip on Vibratory Response: Part 2: A Comparison with Experimental Results," *Journal of Sound and Vibration*, Vol. 107, pp. 295-307, 1986.

C.H. Menq, J.H. Griffin, and J. Bielak, "The Influence of a Variable Normal Load on the Forced Vibration of a Frictionally Damped Structure," *ASME Journal of Engineering for Gas Turbines and Powe*r, Vol. 108, pp. 300-305, 1986.

J. Bielak and P. Christiano, "On the Effective Seismic Input for Nonlinear Soil-Structure Interaction Systems," *Earthquake Engineering and Structural Dynamics*, Vol. 12, pp. 107-119, 1984.

C.H. Menq, J.H. Griffin, and J. Bielak, "The Forced Response of Shrouded Fan States," *ASME Journal of Vibrations, Acoustics, Stress and Reliability in Design*, Vol. 108, pp. 50-55, 1986.

R.H. Allen, I.J. Oppenheim, and J. Bielak, "Rigid Body Mechanisms in Structural Dynamics," *Proceedings of the 8th World Conference on Earthquake Engineering*, Vol. IV, pp. 299-306, San Francisco, CA, 1984.

J.H. Griffin and J. Bielak, "Research on Friction Damping in et Engines at Carnegie Mellon University," *Proceedings of the Air Force Sponsored Vibration and C\Damping Workshop*, Long Beach, CA, February, 1984.

J. Bielak and R.C. MacCamy, "Mixed Variational Finite Element Methods for Interface Problems," *Unification of Finite Element Methods* (H. Kardestucer, Ed.), pp. 149-165, North-Holland Publishing Co., 1984.

J. Bielak, R.C. MacCamy and D.S. McGhee, "On the Coupling of the Finite Element and Boundary Integral Methods," *Earthquake Source Modeling, Ground Motion, and Structural Response* (S.K. Datta, Ed.), PVP-Vol. 80, AMD-Vol. 60, pp. 115-132, The American Society of Mechanical Engineers, 1984.

R. Chelliah and J. Bielak, "Track Aspects of Train Rolling Resistance – Linear and Nonlinear Foundation Models," Report R-84-145, Department of Civil Engineering, Carnegie Mellon University, August, 1984.

R.H. Allen, J. Bielak, and I.J. Oppenheim, "Dynamic Response of Rigid Prism Assemblies," *Recent Advances in Engineering Mechanics and Their Impact on Civil Engineering Practice*, Proceeding of the 4th Engineering Mechanical Division Specialty Conference, ASCE, Vol. I, pp. 142-145, Purdue University, West Lafayette, IN, May, 1983.

J. Bielak and S. Sriram, "On Response of Beams on Elastic Foundations," *Recent Advances in Engineering Mechanics and Their Impact on Civil Engineering Practice*, Proceedings of the 4th Engineering Mechanics Division Specialty Conference, ASCE, Vol. I, pp. 435-438, Purdue University, West Lafayette, IN, May 1983.

J. Bielak and E. Stephan, "A Modified Galerkin Procedure for Bending of Beams on Elastic Foundations," *SIAM Journal of Statistical and Scientific Computation*, Vol. 4, No. 2, pp. 349-352, 1983.

J. Bielak and R.C. MacCamy, "An Exterior Interface Problem in Two-Dimensional Elastodynamics," *Quarterly of Applied Mathematics*, Vol. 41, No. 1, pp. 143-159, 1983.

S. Fenves, J. Bielak, D. Rehak, M. Rychener, D. Sriram, and M.L. Maher, "Feasibility Study of an Expert System for Peoplemover Operation and Maintenance," report of a cooperative project between Westinghouse Transportation Division, The Robotics Institute and the Civil Engineering and Construction Laboratories at Carnegie Mellon University, January, 1983.

D. Sriram, M.L. Maher, J. Bielak, and S.J. Fenves, "Expert Systems for Civil Engineering – A Survey," Report R-82-137, Department of Civil Engineering, Carnegie Mellon University, 1982.

J. Bielak, "Initial Pore Pressure from Vertical Surface Loads," *ASCE Journal of the Geotechnical Engineering Division*, Vol. 108, pp. 1167-1171, 1982.

J. Bielak, "Some Remarks on Bounds to Eigenvalues of Strum-Liouville Problems with Discontinuous Coefficients," *Journal of Applied Mathematics and Physics (ZAMP)*, Vol. 32, pp. 647-657, 1981.

J. Bielak, "A Discussion of Papers Submitted to the Session on Soil-Structure Interaction," *Proceedings of the International Conference on Recent Advancement in Geotechnical Earthquake Engineering and Soil Dynamics*, Vol. 2, pp. 801-804, St. Louis, MO, April, 1991.

B. Martinez and J. Bielak, "On the Three-Dimensional Seismic Response of Earth Structures," *Proceedings of the 7th World Conference on Earthquake Engineering*, Vol. 8, pp. 523-530, Istanbul, Turkey, September, 1980.

R.V. Whitman and J. Bielak, "Foundations," Chapter 7 in *Design of Structures to Resist Earthquakes* (E. Rosenblueth, Ed.), Pentech Press, 1980.

J. Bielak, "Dynamic Response of Nonlinear Building-Foundation Systems," *International Journal of Earthquake Engineering and Structural Dynamics*, Vol. 6, pp. 17-30, 1978.

J. Bielak, "Modal Analysis for Building-Soil Interaction," *ASCE Journal of the Engineering Mechanics Division*, Vol. 102, pp. 771-786, 1976.

I.Herrera and J. Bielak, "Dual Variational Principles for Diffusion Equations," *Quarterly of Applied Mathematics*, Vol. 34, pp. 85-102, 1976.

J. Bielak, "Dynamic Interaction Between Structures with Large Base Masses and the Soil," (in Spanish), *Instituto de Ingenieria*, UNAM, Vol. 362, January, 1976.

J. Bielak, "Dynamic Behavior of Structures with Embedded Foundations," *Earthquake Engineering and Structural Dynamics*, Vol. 3, pp. 259-274, 1975.

J. Bielak, "Three-Dimensional Earthquake Analysis of Earth Dams," (in Spanish), Report of the Institute of Engineering to the Mexican Federal Power Commission, May, 1975.

E. Santoyo and J. Bielak, "Effects of the Lima, Peru Earthquake of October 3, 1974," (in Spanish), *Ingenieria*, Vol. 45, pp. 381-398, 1975.

I. Herrera and J. Bielak, "Applications of Dual Principles to Diffusion Equations," *Instituto de Ingenieria*, Vol. E 12, January, 1975.

J. Bielak and B. Martinez, "An Asymmetric Mixed Boundary-Value Problem of the Elastic Layer: Translation of a Rigid Circular Disc Parallel to the Contact Plane," *International Journal of Engineering Science*, Vol. 12, pp. 821-835, 1974.

I. Herrera and J. Bielak, "A Simplified Version of Gurtin's Variational Principles," *Archives for Rational Mechanics and Analysis*, Vol. 53, pp. 131-149, 1974.

I. Herrera and J. Bielak, "Discussion of Proceedings Paper 9152: Variational Formulation of Dynamics of Fluid-Saturated Porous Elastic Solids," ASCE Journal of Engineering Mechanics, Vol. 99, pp. 1097-1098, 1973.

J. Bielak, "Comments on the Paper: Vertical Vibration of a Rigid Circular Body and Harmonic Rocking of a Rigid Rectangular Body on an Elastic Stratum," *International Journal of Solids and Structures*, Vol. 9, pp. 879-880, 1973.

P.C. Jennings and J. Bielak, "Dynamics of Building-Soils Interaction," *Bulletin of the Seismological Society of America*, Vol. 63, pp. 9-43, 1973.

J. Bielak, "Base Moment for a Class of Linear Systems," *Journal of Engineering Mechanics, ASCE*, Vol. 95, 1053-1062, 1969.