



Disaster Reduction News

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Academic Exchange Activities

1. Prof. M. Gu and his team members, Dr. P. Huang and X.Y. Zhou, attended the APCEW-6 in Seoul, Korea, on 12-14 Sept. Prof. M. Gu organized and chaired a session entitled “Wind loads and responses of large-span roof structures” in the conference. Besides, He served as a member of International Advisory Committee of the conference. Prof. Gu’s team presented 7 papers in the conference.



2. Prof. Gu was invited to give keynote or invited lectures in 2005 National Conference on Structural Dynamics, National Conference on Aeroelasticity, National Conference on Structural Wind Engineering, China-US Special Workshop on Multiple Hazards Resistant Strategy and Monitoring Technologies for Large Public Buildings.



3. The 4th International Conference on Advances in Steel Structures was organized by the Tongji University on 13-15 June, 2005. Prof. Z.Y. Shen and G. Q. Li are the chairmen of the conference. Over 240 participants attended the conference.
4. The Sino-US Symposium on Multi-hazard Mitigation for Large Public Buildings was held in Shanghai on 20-21 May, 2005. Prof.G.Q.Li from Tongji University and Prof.George Lee from University of New York at Bufflo chaired the Symposium.
5. Prof.G.Q.Li made a keynote presentation at the 2nd Worldwide Codified Design Technology in Steel Structures in Hongkong on 17-18 June 2005.
6. The 3rd National Conference on Fire-Resistance for Steel Structures & the 1st National Conference on Structural Fire-Resistance was held in Fuzhou on 11-12 November 2005. Prof.G.Q.Li was the chairman of the two conferences.



7. Professor Xilin Lu attended “The 4th Middle-East Conference on Structural Applications of FRP in Civil Infrastructures” held on 13–25 May 2005, Egypt, and gave a presentation entitled “Research and structural engineering application of FRP in Mainland China”. There were about 200 people attending this Conference.
8. Professor Xilin Lu attended “The 1st International Conference on Advances in Experimental Structural Engineering (AESE)” held on 17–25 July 2005, Japan, and gave two presentations. On behalf of Tongji University, Prof. Lu won to host the next AESE conference after hot competition and kind

negotiation with worldwide competitors. The 2nd International Conference on AESE will be held in December, 2007 in Shanghai.



9. Professor Xilin Lu attended the 2005 Symposium of International Association of Bridge and Structure Engineering (IABSE) held on 10–17 September 2005, Portugal, and gave a presentation entitled “Test and analysis for a shaking table model of hybrid structures”.
10. Professor Xilin Lu attended the APEC-EQTaP Seminar on Earthquake and Tsunami Disaster Reduction held on 26–29 September 2005, Indonesia, and gave a invited presentation entitled “Experimental Study and Field Applications of FRP Strengthened Masonry Walls”.
11. Professor Xilin Lu attended The 10th National Conference on Seismic Resistance of High-rise Buildings on 2–4 December 2005, Guangzhou, and gave a keynote presentation entitled “Study on Performance–based Seismic Design of Shanghai World Financial Center Tower”.
12. Professor Xilin Lu attended The 6th International Conference on Tall Buildings on 5–9 December 2005, Hong Kong, and gave two presentations about the seismic research on tall building structures.
13. Professor Xilin Lu presided at the 2nd National Conference on the Retrofitting and

Strengthening Technology on 19–21 December 2005, Shanghai, and gave a keynote presentation entitled “Application of Passive Control Technology to Two Large Engineering Structures”. There were 216 people attending this Conference.

14. Professor Limin Sun attended The 2nd International Conference on Structural Health Monitoring of Intelligent Infrastructure held in Shenzhen, China on November 16-18, 2005, and made an invited presentation entitled “Conceptual design and key issues of structural health monitoring system for Donghai Bridge”..



15. Professor Yao-Jun Ge and Dr. Lin Zhao attend the 9th International Conference on Structural Safety and Reliability in Rome, Italy on June 19-23, 2005, and made 2 presentations in the conference.
16. Professors Yao-Jun Ge and Le-Dong Zhu, as well as Dr. Yongxin Yang attend the 4th European & African Conference on Wind Engineering in Prague, Czech on July 11-15, 2005, and made 3 presentations in the conference.
17. Professors Hai-Fan Xiang and Yao-Jun Ge attend the annual meeting of IABSE and the IABSE 2005 Conference on Structures and Extreme Events held in Lisbon, Portugal on September 14-17, 2005. Prof. Xiang was reelected consecutively as vice president of IABSE, and Prof. Ge was reappointed consecutively as the

member of Working Commission One of IABSE after a four-year term. Prof. Ge made the presentation entitled “Long-span bridges and extreme wind effects”.

18. Professors Zhi-Xing Lin and Yao-Jun Ge organized the 12th National Conference on Structural Wind Engineering at Changan University in Xi'an, Shanxi Province, on October 19-22, 2005. The Scientific Committee and the Organizing Committee were chaired by Profs. Zhixing Lin and Yao-Jun Ge, respectively.
19. Professor Yao-Jun Ge attend the 2nd Workshop on Regional Harmonization of Wind Loading and Wind Environmental Specifications in Asia-Pacific Economies held in Hong Kong on December 5-6, 2005, and made the Chinese National Report entitled “The amendment of wind load code for design of building structures in Chinese national standard”. There were about 40 workshop participants on behalf of 14 countries and areas of Asia-Pacific Economics.
20. In July 11-12, the Innovative Research Group Granted by the Natural Science Foundation of China held a summer symposium on Multi-Hazards in Shanghai. Prof. Jie Li, Prof. Xilin Lu, Prof. Ming Gu, Prof. Guoqiang Li and other 10 members of the Innovative Research Group, together with three famous scholars, Prof. Zhongxian Li from Tianjin University, Prof. Aiqun Li from Southeast University and Prof. Weiqing Liu from Nanjing University of Technology as invited observers, attended the symposium. In the two days' summer symposium, the scholars carried out fruitful discussions on categories of multi-hazards, the mechanism of coupling action of multi-hazards, response analysis, performance control, design theory, safety monitoring and warning of engineering structures and systems under multi-hazards.

21. In September 15-18, Prof. Jie Li, together with Ph.D. student Linlin Zhang, attended the Sixth Asia-Pacific Conference on Wind Engineering in Seoul, Korea.
22. In November 15-18, Prof. Jie Li, Dr. Ming Zhao, Dr. Jun Chen, Dr. Qiang Xie, Dr. Jianbing Chen and Ph.D. student Tao He attended the Second International Conference on Structural Health Monitoring of Intelligent Infrastructure in Shenzhen, China. 5 presentations, including one invited presentation, were given by the group on the conference.
23. In November 18-20, Prof. Jie Li and other four scholars together with two Ph.D. students in our group attended the Seventh National Conference on Theory and Engineering Applications of Structural Computation in Fuzhou, China. As chairman of the conference, Prof. Jie Li gave the opening speech and an invited presentation.
24. In November 20-22, Prof. Jie Li, Dr. Jianbing Chen and Ph.D. student Yang Cao attended the International Symposium on Innovation & Sustainability of Structures in Civil Engineering in Nanjing China. Prof. Jie Li gave an invited presentation in the plenary meeting. The scientific committee decided that the Second International Symposium on Innovation & Sustainability of Structures in Civil Engineering be held in Tongji University in November, 2007.
25. Professors Jianzhong Li and Shide Hu visited U.S. Federal Highway Administration, and prepared for 4th PRC-US Bridge Engineering Workshop
26. Professors Airong Chen and Xigang Zhang attended 11th ICSGE on 17-19 May 2005 in Cairo, Egypt, and made a keynote presentation entitled “Structural Design of Sutong Bridge”.
27. Professor A.R. Chen attended EACWE4 on 11-15 July 2005, Prague, and made a presentations entitled “Determination of Flutter Derivatives by

Taut strip Model I: Theory”, “Determination of Flutter Derivatives by Taut strip Model II: Application”, “Analysis of wind time history using wavelet transform” and “Determination of Flutter Derivatives through Full Bridge Aeroelastic Model”.



Research developments

1. Professor Ming Gu and his team recently completed the wind-resistant research work on Terminal 2 in Shanghai Pudong International Airport. The research work includes wind tunnel tests of the scaled model and computations of static and dynamic responses as well as the equivalent static wind loads by using a computer program named SWDP developed by the research team.



2. Professor Le-dong Zhu and Ming Gu and their teams recently completed the wind-resistant research work on Guangzhou New TV Tower, which has a height of 610 m and is the tallest TV tower in the world. The research includes the following tasks:
 - (1) Determination of the distribution of mean and fluctuating wind loads along the tower height via a series of high-frequency force-balance tests with sectional rigid models in grid-generated turbulent flow.
 - (2) Determination of the distribution of mean and fluctuating pressure on the exposed surface of the core tube and closed functional sections of the tower via a series of pressure-measurement tests.
 - (3) Determination of wind-induced vibration responses and equivalent wind loads of the tower via computations using SWDP specially developed by the team for wind induced responses of structures.
 - (4) Determination of wind-induced vibration responses and equivalent wind loads via a full tower aeroelastic model test.
 - (5) Measurement of wind speeds at pedestrian level

over the sight-seeing roof garden and the platform of the tower square.



3. Professor Ming Gu and his team recently completed the experimental study on wind loads, wind-induced responses and equivalent static wind loads of China Maritime Museum.
4. Professor Chen and his team recently completed the wind-resistant research work on Suramadu Bridge, which is a long span bridge in Indonesia. The main bridge is a double-pylon and double-cable-plane cable-stayed bridge having spans arrangements of 192+434+192m, with vase-shape pylons of about 140m height. The bridge's deck consists of two main steel box-girders at sides. Each box-girder has a height of 2.8m and width of 2.3m, connected by I-shape cross steel beams.
5. Professor A.R. Chen and his team recently completed the wind-resistant research work on MinPu Bridge across Yangtze River, which has a total length of 3610m. The main bridge is a double-cable-plane double-pylon steel-truss double-deck-girder cable-stayed bridge, with the length of 1212m and the main span is 708m.
6. Prof. Xilin Lu and Zhong Fang invented the "Dynamo Energy-Dissipation Turned Mass Damper", which was patented for invention by the No. ZL 02 1 45115X (E04B 1/98) in April, 2005.



Study on wind-resistance of MinPu Bridge

7. A key research program supported by Shanghai Committee of science and Technology (No. 03dz11003), 'Research on bridge structural health monitoring by using Fiber Bragg Grating (FBG) and GPRS based wireless sensor technology', was completed last month. Prof. Limin Sun is the principal investigator of the program. In this program, a novel FBG sensor technology and a GPRS wireless communication network and internet based structural vibration sensor technology were developed successfully. Some key issues on bridge health monitoring and condition evaluation were investigated. The technologies developed were applied in the health monitoring system for Donghai Bridge. As a test bed, this tentative FBG sensor system has acted as a good model for structural health monitoring system for large bridges.



8. Professor Yao-Jun Ge and his team recently completed the wind-resistant performance and flutter mitigation of cable-stayed bridges in East Sea Bridge, which was appraised by Shanghai

Science and Technology Commission. Probabilistic assessment method for bridge flutter, equivalent static wind loading analysis for cable-stayed bridges and practical countermeasures of flutter mitigation for cable-stayed bridges were evaluated.

- 9. Professor Yao-Jun Ge and his team recently completed two wind-tunnel study projects on cooling towers of domestic power plants, Kanshan Power Plant in Xuzhou City of Jiangsu Province and Tianji Power Plant in Huainan City of Anhui Province. The cooling towers in both projects are 150m high and 108m in diameter. The pressure measurement of wind tunnel testing and equivalent wind loading analysis were carried out for single tower and a group of towers.
- 10. Double spherical seismic bearing, which is developed by Prof. L. C. Fan and his team, has the merit of compact configuration and reliable seismic performance. Test and analysis investigation have been performed to find the effect on continuous girder bridges, and it's proved an effective and reliable measure to protect bridges from earthquakes.



Technical papers (Abstract)**1. Electro-magneto-elastic analysis of a piezoelectromagnetic strip with a finite crack under longitudinal shear**

(Published in *Mechanics of Materials*, 37 (9): 925-934, 2005)

Electro-magneto-elastic analysis of a piezoelectromagnetic strip with a finite crack under longitudinal shear

K Q Hu and G Q Li

Abstract The singular stress, electric and magnetic fields in a piezoelectromagnetic strip containing a Griffith crack under longitudinal shear are obtained by the theory of linear piezoelectromagnetism. The crack is situated symmetrically and oriented in a direction parallel to the edges of the strip. Fourier transforms are used to reduce the mixed boundary value problems of the crack, which is assumed to be either impermeable or permeable, to dual integral equations. The solution of the dual integral equations is then expressed in terms of Fredholm integral equations of the second kind. Expressions for strains, stresses, electric fields, electric displacements, magnetic fields and magnetic inductions in the vicinity of the crack tip are derived. For the impermeable crack, the electric field intensity factor (EFIF) and the magnetic field intensity factor (MFIF) depend on the edge loading conditions, whereas, the EFIF and MFIF for the permeable crack are always zero. The results obtained show that the width of the strip have significant influence on the field intensity factors and the energy release rates.

2. Wind Load on Integral-Lift Scaffolds for Tall Building Construction

(Published in *Journal of Structural Engineering*, 131(5): 816-824, 2005)

Wind Load on Integral-Lift Scaffolds for Tall Building Construction

F Yue, Y Yuan, G Q Li and K M Ye

Abstract The integral-lift scaffolds are widely used in construction of tall buildings in Asia. However, the wind load on scaffolds may be much greater than dead load and be the dominant effect as the scaffolds climb over 150 m in height. The shape coefficient and vibration coefficient are important factors in calculation of wind load. However, there is no available approach at present for determining the two coefficients for calculating the wind load on this temporary structure. In order to determine the shape coefficient of wind pressure on the typical scaffolds, wind tunnel tests have been conducted. The drag coefficients have been measured, which are proved to be identical to the wind shape coefficients. By using random vibration theory, formulae are obtained for predicting the wind vibration coefficients of the scaffolds at the two stages of climbing up and down. The useful guidelines for the safe design of integral-lift scaffolds against winds are proposed in this paper.

3. Experimental study on wind-induced dynamic interference effects between two tall buildings

(Published in *Wind and Structures---An International Journal*, 8(3): 147-162, 2005)

Experimental study on wind-induced dynamic interference effects between two tall buildings

Peng Huang and Ming Gu

Abstract Two identical tall building models with square cross-sections are experimentally studied in a wind tunnel with high-frequency-force-balance (HFFB) technique to investigate the interference effects on wind loads and dynamic responses of the interfered building. Another wind tunnel test, in which the interfered model is an aeroelastic one, is also carried out to further study the interference effects. The results from the two kinds of tests are compared with each other. Then the influences of turbulence in oncoming wind on dynamic interference factors are analyzed. At last the artificial neural networks method is used to deal with the experimental data and the along-wind and across-wind dynamic interference factor (IF_{dx} & IF_{dy}) contour maps are obtained, which could be used as references for wind load codes of buildings.

4. Effects of applied stress level on plastic zone size and opening stress ratio of a fatigue crack

(Published in *International Journal of Fatigue*, 27: 519—526, 2005)

Effects of applied stress level on plastic zone size and opening stress ratio of a fatigue crack

T C Chang, G Q Li and J Hou

Abstract Based on a complex function method developed by Budiansky and Hutchinson [J Appl Mech, 1978;45:267], a theoretical analysis of the effects of the applied stress level on fatigue crack closure under large-scale yielding conditions is conducted. Firstly, we obtain the explicit expression for the crack opening displacement in plastic zone under large-scale yielding conditions from the Dugdale model. The expression, along with that of the plastic zone size under large-scale yielding conditions, is then introduced into the Budiansky and Hutchinson model to account for the effects of the applied stress level over a large stress range on the reversed-to-forward ratio and the opening stress ratio of fatigue cracks. We show that both the ratios decrease with the increasing applied stress level. The present results are compared with the experimental data, the finite element calculations and the prediction of the Newman equation.

5. A correlation-based analysis on wind-induced interference effects between two tall buildings

(Published in *Wind and Structures---An International Journal*, 8(3): 163-178, 2005)

A correlation-based analysis on wind-induced interference effects between two tall buildings

Zhuang Nin Xie and Ming Gu

Abstract Wind-induced mean and dynamic interference effects of tall buildings are studied in detail by a series of wind tunnel tests in this paper. Interference excitations of several types of upwind structures of different sizes in different upwind terrains are considered. Comprehensive interference characteristics are investigated by artificial neural networks and correlation analysis. Mechanism of the wakes vortex-induced resonance is discussed, too. Measured results show significant correlations exist in the distributions of the interference factors of different configurations and upwind terrains and, therefore, a series of relevant regression equations are proposed to simplify the complexity of the multi-parameter wind induced interference effects between two tall buildings

6. Hybrid identification method for multi-story buildings with unknown ground motion: Experimental investigation

(Published in *Engineering Structures*, 27(8): 1234-1247, 2005)

Hybrid identification method for multi-story buildings with unknown ground motion: Experimental investigation

Xin Zhao, Yulin Xu, Jun Chen and Jie Li

Abstract A hybrid method for identifying both structural parameters and ground motion of an earthquake-excited multi-story building is experimentally examined in this paper. A series of shaking table tests was conducted on a building model under different kinds of ground motion. Absolute acceleration responses at all floors of the test building were measured and integrated to obtain velocity and displacement responses. All the measured and integrated responses are then analysed using the hybrid identification method with a shift-average procedure to identify the stiffness and damping parameters as well as to reconstruct the unknown seismic input. To evaluate the reliability of the method, the identified structural stiffness is compared with the theoretical value computed from given material and geometric properties, and the identified structural damping is compared with that obtained from a frequency domain identification method. The reconstructed seismic excitation is compared with that recorded during the shaking table test in both the frequency domain and time domain. All comparisons show a good agreement, indicating that the hybrid identification method is potentially a promising technique for structural parameter and seismic excitation identification of multi-story buildings using output measurements only.

7. Experimental evaluation of aerodynamic damping of square super high-rise buildings

(Published in *Wind and Structures---An International Journal*, 8(5): 309-324, 2005)

Experimental evaluation of aerodynamic damping of square super high-rise buildings

Yong Quan, Ming Gu and Yukio Tamura

Abstract Aerodynamic damping often plays an important role in estimations of wind induced dynamic responses of super high-rise buildings. Across- and along-wind aerodynamic damping ratios of a square super high-rise building with a height of 300m are identified with the Random Decrement technique (RDT) from random vibration responses of the SDOF aeroelastic model in simulated wind fields. Parametric studies on effects of reduced wind velocity, terrain type and structural damping ratio on the aerodynamic damping ratios are further performed. Finally formulas of across- and along-wind aerodynamic damping ratios of the square super high-rise building are derived with curve fitting technique and accuracy of the formulas is verified.

8. Buffeting response of long-span cable-supported bridges under skew winds. Part 2: case study

(Published in *Journal of Sound and Vibration*, 2005, 281/3-5, 675-697)

Buffeting response of long-span cable-supported bridges under skew winds.

Part 2: case study

Y L Xu and L D Zhu

Abstract The finite-element-based framework for buffeting analysis of long-span cable-supported bridges under skew winds has been presented in Part 1 of this paper. The framework is now applied to the Tsing Ma Suspension Bridge in Hong Kong as a case study. The wind velocities and bridge responses measured by the Wind and Structural Health Monitoring System (WASHMS) of the bridge during Typhoon Sam in 1999 are first analyzed to find the skew wind characteristics surrounding the bridge, the modal damping ratios and acceleration responses of the bridge. The buffeting responses of the bridge under skew winds during Typhoon Sam are then computed using the wind characteristics and modal damping ratios measured from the field and the aerodynamic coefficients and flutter derivatives of the bridge deck and tower measured from the wind tunnel under skew winds. The computed acceleration responses of the bridge deck and cable are finally compared with the responses measured from the field. The comparison is found to be satisfactory in general and the case study forms a good practical demonstration for the verification of the proposed method for buffeting analysis of long-span cable-supported bridges under skew winds.

9. Computer simulation of the dynamic layered soil-pile-structure interaction system

(Published in *Canadian Geotechnical Journal*, 42(3): 742-751, 2005)

Computer simulation of the dynamic layered soil-pile-structure interaction system

Xilin Lu, Peizhen Li, Bo Chen and Yueqing Chen

Abstract A three-dimensional finite element analysis of the soil-pile-structure interaction system is presented in this paper. The analysis is based on data from shaking table model tests made in the State Key Laboratory for Disaster Reduction in Civil Engineering, Tongji University, China. The general finite element program ANSYS is used in the analysis. The surface-to-surface contact element is taken into consideration for the nonlinearity state of the soil-pile interface, and an equivalent linear model is used for soil behavior. A comparison of the results of the finite element analysis with the data from the shaking table tests is used to validate the computational model. Furthermore, the reliability of the test result is also verified by the simulation analysis. It shows that separation, closing, and sliding exist between the pile foundation and the soil. The distribution of the amplitude of strains in the pile, the amplitude of contact pressure, and the amplitude of sliding at the soil-pile interface are also discussed in detail in this paper.

10. A response spectrum method for seismic response analysis of structures under multi-support excitations

(Published in *Structural Engineering and Mechanics*, 21(3): 255-274, 2005)

A response spectrum method for seismic response analysis of structures under multi-support excitations

Jianhua Li and Jie Li

Abstract Based on the random vibration theory, a response spectrum method is developed for seismic response analysis of linear, multi-degree-of-freedom structures under multi-support excitations is developed. Various response quantities, including the mean and variance of the peak response, the response mean frequency, are obtained from proposed combination rules in terms of the mean response spectrum. This method makes it possible to apply the response spectrum to the seismic reliability analysis of structures subjected to multi-support excitations. Considering that the tedious numerical integration is required to compute the spectral parameters and correlation coefficients in above combination rules, this paper further offers simplified procedures for their computation, which enhance dramatically the computational efficiency of the suggested method. The proposed procedure is demonstrated for two numerical examples: (1) two-span continuous beam; (2) two-tower cabled-stayed bridge by using Monte Carlo simulation (MC). For this purpose, this paper also presents an approach to simulation of ground motions, which can take into account both mean and variation properties of response spectrum. Computed results based on the response spectrum method are in good agreement with Monte Carlo simulation results. And compared with the MSRS method, a well-developed multi-support response spectrum method, the proposed method has an incomparable computational efficiency.

11. Vibration Control of Railway Bridges under High-Speed Trains Using Multiple Tuned Mass Dampers

(Published in *J. Bridge Engineering*, 10 (3): 312-320, 2005)

Vibration Control of Railway Bridges under High-Speed Trains Using Multiple Tuned Mass Dampers

Jianzhong Li, Mubiao Su and Lichu Fan

Abstract In this paper, multiple tuned mass dampers (MTMDs) are considered for suppressing the vibration of railway bridges under high-speed trains. The interaction equations of motion between the vehicle and the bridge with MTMDs have been developed. The effectiveness of MTMDs on suppressing resonant vibration of railway bridges is examined and the optimum parameters of MTMDs for suppressing the resonant vibration are proposed. The results indicate that the use of the MTMD with the optimum parameters reduces the displacement.

12. On the Chinese Code on Fire Safety Design of Steel Building Structures

(Published in *Steel and Composite Structures*, 5: 395-405, 2005)

On the Chinese Code on Fire Safety Design of Steel Building Structures

G Q Li and S X Guo

Abstract This work introduces to the international scientific community the Chinese Code on fire safety design of steel building structures. The aim of the Code is to prevent the structure of a steel building subjected to fire from collapsing, ensure safe evacuation of building occupants, and reduce the cost for repairing the damages of the structure caused by fire. The main contents of the Code is presented in this paper, including the fire duration requirements of structural components, fundamental requirements on fire safety design of steel components, temperature increasing of atmosphere and components in fire, loading effect and capacity of various components in fire, and procedure for fire resistant design of steel components. The analytical approach is employed in the Code and the effectiveness of the Code is validated through experiments.

13. The State-of-the-Art on Long-Span Bridge Aerodynamics in China

(Published in *Journal of Structural Engineering International*, 15(4): 240-247, 2005)

The State-of-the-Art on Long-Span Bridge Aerodynamics in China

H F Xiang and Y J Ge

Abstract The state-of-the-art on long-span bridge aerodynamics in China is reviewed in this paper with the emphases on three aspects: contributions in the development of aerodynamic theories, probability based assessment method in evaluating bridge aerodynamics and aerodynamic vibration control. The theoretical development discussed in this paper comprises the full-mode flutter analysis method, some new findings in flutter mechanism and stabilization as well as CFD techniques and application. A series of probabilistic assessment approaches is then proposed and applied in wind induced vibration investigation including flutter instability, buffeting response and vortex-induced vibration. The final aspect focuses on the aerodynamic vibration control of long span bridges experienced in China, in particular, in the State Key Laboratory for Disaster Reduction in Civil Engineering at Tongji University.

List of other recent publications

1. Suyan Ren, Ming Gu, Static Analysis Of Cables' Configuration In Cable Stayed Bridge, *Journal of Tongji Univ.*, 33 (5): 595-599, 2005.
2. Du Xiao-qing, Gu Ming, Testing study on wind pressure distributions of stayed cables with fixed artificial rivulet, *Journal of Tongji Univ.*, 33 (5): 585-589, 2005.
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4. Shou Ying Li and Ming Gu, Numerical Simulation for Flow Around Perpendicular and Oblique Circular Cylinders, *ACTA Aerodynamica Sinica*, 23 (2) : 222-227, 2005.
5. Peng Huang, Ming Gu, Interference effect of wind induced torsion responses of tall buildings, *Journal of Building Structures*, 26(4): 86-91, 2005.
6. Xianrong Qin, Ming Gu, Determination of flutter derivatives of bridge decks by stochastic system identification techniques, *China Civil Engineering Journal*, 38(4): 73-77, 2005.
7. Zhuangnin Xie, Ming Gu, Zhenhua Ni, Testing study on along-wind dynamic interference effects among three buildings in arbitrary arrangements, *Engineering Mechanics*, 22 (5) : 136-141, 2005.
8. Ming Gu, Xuaqing Du, Testing study on wind pressure distributions of stayed cables with a fixed artificial rivulet, *ACTA Aerodynamica Sinica*, 23(4), 2005.
9. Ming Gu, Chuanhai Zhu, Wind tunnel test on an aeroelastic model of grandstand cantilevered roof of large stadium and features of wind-induced responses, *China Civil Engineering Journal*, 38(5), 2005.
10. Ming Gu, Chuanhai Zhu, Polar coordinate method for wind induced dynamic responses of arc grandstand-roofs of large stadiums, *J. of Vibration Engineering*, 18(4): 443-447, 2005.
10. Feifei Sun, Guoqiang Li, A closed-form solution for steel-concrete composite beams with slip, shear lag and shear deformation, *Engineering Mechanics*, 22(2): 96-104, 2005.
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17. Guoqiang Li, Yong Du, Utility temperature elevation empirical formula in large space fire, *Fire Science and Technology*, 24(3): 283-287, 2005.
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20. Guoqiang Li, Mingji Fang, Yijing Liu, Ye Lu, An experimental study on the seismic behavior of ALC external wall panels in steel frames, *China Civil Engineering Journal*, 38(10): 27-31, 2005.
21. Xilin Lu, Jiejiang Zhu and Jie Liu. Simplified elasto-plastic time-history analysis with test verification of the structure of Shanghai World Financial Center. *Earthquake Engineering and Engineering Vibration*, 25(2): 34-42, 2005.
22. Guojun Zhang and Xilin Lu. Seismic damage model of high strength reinforced concrete frame columns. *Earthquake Engineering and Engineering Vibration*, 25(2): 100-104, 2005.
23. Peizhen Li, Xilin Lu and Heping Song. Effect of subsoil liquefaction on earthquake response of highrise building system. *Earthquake Engineering and Engineering Vibration*, 25(2): 141-149, 2005.
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