

# **Keh-Han Wang**

Professor and Director of Civil Engineering Graduate Program

Department of Civil and Environmental  
Engineering University of Houston, Houston, TX  
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## **EDUCATION**

Ph.D.	University of Iowa	1985	Mechanical Engineering (Hydrodynamics)
M.S.	University of Iowa	1981	Civil and Environmental Engineering
B.S.	National Cheng-Kung Univ.	1978	Hydraulic and Ocean Engineering

## **PROFESSIONAL EXPERIENCE**

Professor (9/03-present) and Director of Civil Engineering Graduate Program (5/06-present), Associate Professor (9/96-8/03), Assistant Professor (8/90- 8/96) - Department of Civil and Environmental Engineering, University of Houston, Houston, Texas.

Hydrologist (2/90-7/90) - Northwest Florida Water Management District, Havana, Florida.

Assistant Research Scientist (7/88-1/90) -Coastal and Oceanography Engineering Department, University of Florida, Gainesville, Florida.

Postdoctoral Research Fellow (11/85-6/88) - Engineering Science Department, California Institute of Technology, Pasadena, California.

Full-time Teaching Assistant (6/78-6/79) - Department of Hydraulic Engineering, National Cheng-Kung University, Tainan, Taiwan.

## **TECHNICAL SPECIALTIES**

- Nearshore & Offshore wave mechanics and wave-structure interaction
- 3-D hydrodynamic and pollutant transport modeling in lakes, estuaries, and coastal areas
- Overland and flood flow modeling
- Hurricane induced storm surge modeling
- Urban stormwater runoff, low impact development and associated drainage analysis
- Development of expert system related models applied to hydraulic/hydrological engineering
- Hydraulics and sediment transport dynamics
- Flows through porous media

## **TEACHING**

### **Courses Taught at the University of Houston**

CIVE4312 CE Design Project (undergraduate)  
CIVE3434: Fluid Mechanics and Hydraulic Engineering (undergraduate)  
CIVE3334: Hydraulic Engineering (undergraduate)  
CIVE7335: Coastal Hydrodynamics (graduate)  
CIVE7397: Coastal/Offshore Hydrodynamics (graduate)  
CIVE7397: Computational Hydraulics (graduate)  
CIVE6331: Hydraulics of Open Channel Flow (graduate)  
CIVE6371: River Mechanics and Sediment Transport (graduate)

CIVE6372: Hydrodynamics of Offshore Structures

CIVE6322: Storm Water Management

**Teaching Evaluation**

Response to Question 10: "Based on what I have seen in this class, I believe this instructor is an effective educator." (Scale 1 to 4, 4 is the best. Starting from Fall 2007, the evaluation scale was changed to 1 to 5 as 5 is the best.)

Semester		course	Score	Score/college Ave.	No. of Responses
Fall	16	CIVE3434	5.00/4.03	1.24	14
Spring	16	CIVE3434	4.57/4.11	1.11	30
Fall	15	CIVE3434	4.68/4.04	1.16	22
Fall	15	CIVE6372	4.27/4.31	0.99	11
Summer	15	CIVE6322	4.82/4.69	1.03	11
Spring	15	CIVE3434	4.44/4.05	1.10	27
Fall	14	CIVE3434	4.29/4.10	1.05	24
Summer	14	CIVE6331	4.91/4.45	1.10	11
Fall	13	CIVE3434	4.77/3.98	1.20	13
Fall	13	CIVE7397	4.5/4.43	1.02	14
Spring	13	CIVE4312	4.7/4.25	1.11	20
Fall	12	CIVE6331	5/4.34	1.15	14
Spring	12	CIVE3434	4.43/4.11	1.08	31
Fall	11	CIVE7397	5/4.39	1.14	6
Spring	11	CIVE3434	4.58/4.13	1.11	24
Fall	10	CIVE6331	4.9/4.3	1.14	11
Spring	10	CIVE3434	4.74/4.07	1.16	38
Fall	09	CIVE7335	4.67/4.08	1.15	
Spring	09	CIVE6331	4.71/4.48	1.05	
Fall	08	CIVE3434	4.63	1.16	
Spring	08	CIVE6331	5	1.17	
Fall	07	CIVE7335	4.45	0.98	
Spring	07	CIVE3434	3.62	1.14	
Fall	06	CIVE6331	3.71	1.10	
	06	CIVE3434	3.30	1.06	
Spring	06	CIVE3434	3.40	1.05	
Fall	05	CIVE6331	3.90	1.17	
Spring	05	CIVE3434	3.39	1.06	
	05	CIVE7397	3.83	1.13	
Fall	04	CIVE3434	3.06	1.00	
	04	CIVE7335	3.60	1.03	
Spring	04	CIVE3434	3.50	1.10	
Fall	03	CIVE3434	3.55	1.12	
	03	CIVE6331	3.83	1.14	
Spring	03	CIVE3434	3.18	1.01	
Fall	02	CIVE3434	3.88	1.26	
	02	CIVE7397	3.43	0.98	
Spring	02	CIVE3434	3.15	1.05	
Fall	01	CIVE3434	3.43	1.20	
	01	CIVE6331	3.88	1.16	

Spring	01	CIVE3434	3.69	1.20
Fall	00	CIVE3434	3.81	1.21
	00	CIVE7335	4.00	1.22
Spring	00	CIVE3434	3.62	1.19
Fall	99	CIVE6331	3.67	1.13
		CIVE3434	3.40	1.05
Spring	99	CIVE3434	3.64	1.19
Fall	98	CIVE6331	3.71	1.12
		CIVE3434	2.90	0.93
Spring	98	CIVE3434	3.71	1.23
		CIVE7335	4.00	1.10
Fall	97	CIVE6331	3.71	1.18
Spring	97	CIVE7397	3.67	1.05
		CIVE3434	3.48	1.13
Fall	96	CIVE6331	3.20	0.97
Spring	96	CIVE7335	4.00	1.20
		CIVE3334	3.56	1.11
Fall	95	CIVE6331	3.90	1.17
		CIVE3334	3.67	1.24
Spring	95	CIVE3334	3.72	1.22
Fall	94	CIVE7397	3.70	1.09
		CIVE3334	3.50	1.14
Summer	94	CIVE6331	3.60	1.09
Spring	94	CIVE3334	3.63	1.22
Fall	93	CIVE7335	3.14	0.92
		CIVE3334	3.20	1.03
Spring	93	CIVE6331	3.50	1.12
Fall	92	CIVE3334	3.79	1.29
		CIVE7335	3.50	1.09
Spring	92	CIVE6331	3.86	1.14
Fall	91	CIVE3334	3.50	1.13
		CIVE7335	3.63	1.05
Spring	91	CIVE6331	3.64	1.13
Fall	90	CIVE3334	2.90	0.98

### **Advising GAANN Fellows**

I have co-received Department of Education funding (2004-2009) with the amount of \$498,132 to support graduate students (GAANN Fellows) pursuing Ph.D. degree. I am currently advising 3 GAANN fellows. In addition to supervising GAANN Fellows' establishment of research program, I have also spent efforts to train them for the summarizing of technical material and the presentation skill for the enhancement of their teaching ability.

### **Advising NSF REU (Research Experience for Undergraduates) Students**

I have co-received National Science Foundation funding (2007-2010) with the amount of \$257,547 to support undergraduate students conducting research in summer. I have advised 2 undergraduate students the past two summers working on the research projects. I worked with REU students closely and educated them the technical background for research and trained their skill of preparing

the research report and oral presentation.

## **SUPERVISION OF RESEARCH GRADUATE STUDENTS**

### Post Doctoral Fellow

Ren, Xugui 9/1/95 - 10/15/95  
Project title: Evaluation of the Impacts, Performance, and Costs of Storm Water Pollution Prevention Plans (SW3P) as Applied to Highway Construction Activities.

### Ph.D. Dissertation Students

Lin Su (in progress)  
Dissertation title: (To be determined)

Mohammed Bashar (in progress)  
Dissertation title: Subcritical Flow Computation in an Open-Channel Network with Dividing Junctions and Sluice Gates

Reza Arti (in progress)  
Dissertation title: Stormwater Drainage Evaluation and Cost/Benefit Analysis on Implemented Low Impact Development Practices

Fangfang Sheng (in progress)  
Dissertation title: Numerical Modeling of Coupled Multi-body Floating Systems with Large Stretching Line Structures under the Combined Waves, Wind and Current Loads

Fong-Shu Jao (in progress)  
Dissertation title: Wave Induced Flow and Transport Modeling Using the Finite Analytic Method

Yan Miao (in progress)  
Scattering of Solitary Waves by a partially Submerged Breakwater or a Floating Body Attached with Two Vertical Porous Walls

Jassim Jaf (in progress)  
Dissertation title: Interaction of Solitary Waves with a Submerged Breakwater and Experimental Visualizations of Induced Vortex Characteristics

Chengzhao Zhang (graduated in August, 2016)  
Dissertation title: Oil Spills Cleanup by Hydrophobic Silica Aerogels and Spilled Oil Interaction with Suspended Sediments

Yu-Hsiang Chen (graduated in May, 2016)  
Dissertation title: A Three-dimensional Fully Nonlinear Wave Model in Curvilinear Coordinates for Simulating Wave Interaction with A Bottom-mounted or Floating Cylindrical Structures

J.C. Kuo (Graduated in May, 2015)  
Dissertation Title: Evaluation of the Best Equation of State for Enhanced Oil Recovery Use in Ultra-high Pressure Hydraulic Calculation

Ted Chu (graduated in December, 2014)  
Dissertation title: Part 1- Geostatistical Interpolation of Rain Fields using Radar Estimates and Gauge Observations: Algorithm Design and Automation and Part 2-Energy Dissipation in Fluid Flows and Wave Transformation by Porous Barriers and Submerged Cavities

Xing Lu (graduated in August, 2011)  
Dissertation title: Nonlinear Shallow-Water Waves Interaction with Floating Structures

J.F. Krou (graduated in December, 2010)  
Dissertation title: Two-Dimensional Modeling of Flow Field and Non-equilibrium Sediment Transport over Irregular Domains and Topographies

Amanda Wood (graduated in May, 2010)  
Dissertation title: 2D Dam-Break Analysis: ADI Based Curvilinear Hydrodynamic Model

Burak Turan (graduated in December, 2008)  
Dissertation title: Free Surface Flow and Wave Modeling using Object Oriented C++ Finite Volume Solver on Irregular Topography with Wetting and Drying

Zhengyong Zhong (graduated in May, 2007)  
Dissertation title: Time-accurate Stabilized Finite Element Model for Nonlinear Shallow-Water Waves

Ziping Dai (graduated in December 2003)  
Dissertation title: Nonlinear Wave Modeling Using Volume of Fluid (VOF)

Method Zhang, Baoxu (graduated in December 2000)  
Dissertation title: Numerical and Experimental Investigation of Air Hammer and Associate Hydraulic Transient in Sewer Pipes

Hu, Haiming (graduated in May, 1999)  
Dissertation title: Three-dimensional Modeling of Open Channel Flows and Transport of Suspended Sediment.

Li, Weimin (graduated in May, 1999)  
Dissertation title: Modeling Nonlinear Shallow Water Waves in Irregular Basins and through A Porous Breakwater.

Ren, Xugui (graduated in August, 1995)  
Dissertation title: Nonlinear Wave Modeling and Wave Interaction with Cylinder Arrays in A Shallow-Water Channel.

#### M.S.Thesis Students

Ayse Yesil Ozden (in progress)  
(To be determined)

Karakoyun Erkan (graduated in May 2016)  
Radar Rainfall Based Runoff Modeling and Warning System

Mustafa Dal (graduated in December 2015)  
Optimization and Modeling of Pressurized Irrigation Networks

Ismat Tarin Khan (graduated in December 2012)  
Thesis title: Predictions of significant wave height in Lake Okeechobee, Florida using Approaches Related to Simplified Stochastic Procedure and Wave Energy Spectrum

Rabih A. Khodr (graduated in December 2006)  
Thesis title: Influence of wave directionality on low frequency response of moored structures

Aysha Habib (graduated in December 2003)  
Thesis title: Dividing Subcritical Flow in Open Channels

Ziping Dai (graduated in May, 2001)  
Thesis title: Numerical Simulation of Dam Break Problem Using Volume of Fluid Method.

Mehrdad Tehrani (graduated in May, 2001)  
Thesis title: Seasonal Variation of Flow Velocity and Suspended Sediment

	Concentration in Lake Okeechobee. (graduated in May, 2000)
Littlejohn, Brandy	Thesis title: Hydrodynamic Modeling of Bolinas Lagoon, California.
Chang, Hui-Lun	(graduated in December, 1999)
	Thesis title: Modeling Overland Flows.
Li, Zhanqing	(graduated in December 1998)
	Thesis title: Wind Driven Currents around A Large Floating Structure in an Enclosed Water Body.
Jilani, Nooreen	(graduated in August 1997)
	Thesis title: Sediment Load Prediction on Highway Construction Sites Using SWMM and A New Erosion Model ÒVISIOSEDÓ.
Shen, Qiang	(graduated in May 1997)
	Thesis title: Hydraulic Transients in Pipelines and Wave Motion over A Group of Submerged Horizontal Plates.
Towsley, Charles	(graduated in May, 1996)
	Thesis title: Head Loss at Manholes in Surcharged Sewer System.
Lei, Jiang	(graduated in August, 1994)
	Thesis title: Hydrodynamic Interactions between Nonlinear Long Waves and Cylinder Arrays.
Ren, Xugui	(graduated in August, 1992)
	Thesis title: Water Waves on A Flexible Porous Breakwater And A Wave-Trapping System.

## **AWARDS AND HONORS**

### **Teaching Awards**

- Teaching Excellence Award (University wide award) 2008-2009
- W.T. Kittinger Outstanding Teacher Award, College of Engineering, 2001-2002. (College's highest teaching award)
- Outstanding Teacher Award, College of Engineering, 1995-96.
- Professor of the Year, Department of Civil and Environmental Engineering, 1995.
- Outstanding Teacher Award, College of Engineering, 1992-93.

### **John B. Hawley Award (1991)**

In Recognition Technical Paper of Outstanding Merit; American Society of Civil Engineers, Texas Section, 1991. Paper title: "Numerical Modeling of the Flow Field at the Confluence of Buffalo Bayou and White Oak Bayou in Houston, Texas".

### **Best of Session Paper, ASCE Texas Section (1991, 1992, 1995, 2007)**

American Society of Civil Engineers, Texas Section, Fall 2007 Meeting. Paper title: "2D Dam-Break Analysis: MacCormack Scheme Based Curvilinear Hydrodynamic Model".

American Society of Civil Engineers, Texas Section, Fall 1995 Meeting. Paper title: "Head Loss at Manholes in Surcharged Sewers".

American Society of Civil Engineers, Texas Section, Fall 1992 Meeting. Paper title: " Study of the Circulatory Change and Alteration of Salinity in Galveston Bay by Using a Three-Dimensional Hydrodynamic and Transport Modeling"

American Society of Civil Engineers, Texas Section, Fall 1991 Meeting. Paper title: "Numerical

Modeling of the Flow Field at the Confluence of Buffalo Bayou and White Oak Bayou in Houston, Texas".

### **Award of Excellence**

Honored by Halliburton Foundation, Inc. in 1996 - In recognition of outstanding achievement and professionalism in education, research, and service to students.

### **Advised Ph.D. students receiving Best Student Paper Awards**

My Ph.D. student, Zhengyong Zhong presented a joint paper entitled "Modeling Solitary Waves Interacting with a Vertical Cylinder Using a Time-accurate Stabilized Finite Element Method" at the Joint ASCE/ASME/SES Conference on Mechanics and Materials (McMat2005) in Baton Rouge, Louisiana on June 2, 2005 and won the Best Student Paper Award among all fluids papers presented by graduate students based on the quality of published conference papers and oral presentations.

My Ph.D. student, Burak Turan won the third place in student paper competition at the World Environmental & Water Resources Congress held in Honolulu, Hawaii from May 12-16, 2008. The title of the paper is "Numerical Solutions to Dam Break Wave Propagation".

My Ph.D. student, Amanda Wood jointly won the Best of Session Paper at the American Society of Civil Engineers, Texas Section, Fall 2007 Meeting held in Fort Worth, Texas. The title of the Paper is "2D Dam-Break Analysis: MacCormack Scheme Based Curvilinear Hydrodynamic Model".

### **Others**

Outstanding Reviewer for the journal of Ocean Engineering, Elsevier, 2015.

### **EDITORSHIP**

Co-Guest Editor for the ASCE Trends in Engineering Mechanics Special Publication No. 2: *Coastal Hazards* (published by ASCE Press, 2013).

Associate Editor, Journal of Engineering Mechanics, ASCE (Oct. 2000-Sept. 2002).

Co-Editor, *Environmental Fluid Mechanics- Theories and Applications* book (published by ASCE Press, 2002).

Guest Editor, Special issue of J. of Engineering Mechanics, ASCE in "Advanced Experimental Techniques in Environmental Fluid Mechanics" (Vol. 129, 2003)

Guest Editor, Special issue of Journal of Engineering Mechanics, ASCE in "Recent Developments in Modeling of Linear and Nonlinear Water Waves, and Turbulent Flows" (July issue, 1999)

### **CHAIRMANSHIP OF TECHNICAL MEETINGS**

Chair of "Mixing and Transport in Fluid Flows – I" session, 2010 ASCE Engineering Mechanics Institute Conference, Los Angeles, CA, August 8-11, 2010.

Chair of "Fluid-Structure Interaction" session, The Theodore Y. Wu Symposium on Engineering Mechanics, 23rd International Conference on Offshore Mechanics and Arctic Engineering, Vancouver, Canada, June 20-25, 2004.

Chair of "Sediment Transport" session, 15<sup>th</sup> ASCE Engineering Mechanics Conference, Columbia University, New York City, NY June 2-5, 2002

Chair of "Hydrodynamics II" session, 2001 Mechanics and Materials Summer Conference, San Diego, CA, June 27-29, 2001.

Chair of “Fluids and Structures II” session, 14th ASCE Engineering Mechanics Conference, Austin, TX, May 21-24, 2000.

Chair of “Water Waves –1” session, 12th ASCE Engineering Mechanics Conference, La Jolla, CA, May 17-20, 1998.

Co-Chair of “Fluid-Structure Interaction –1” and “Fluid-Structure Interaction –2” sessions, 12th ASCE Engineering Mechanics Conference, La Jolla, CA, May 17-20, 1998.

Chair of “Coastal Process” session, Waves 98 Conference, Houston, TX April 30-May 1, 1998.

Co-Chair of “Highway and Construction Runoff”, 24th ASCE annual water resources planning and Management conference, Houston, TX, April 6-9, 1997.

Chair of two “Fluid-Structure Interactions” sessions, 11th ASCE Engineering Mechanics Conference, Fort, Lauderdale, Florida, May 19-22, 1996.

Chair of two “Fluid-Structure Interactions” sessions, 10th ASCE Engineering Mechanics Conference, Boulder, Colorado, May 21-24, 1995.

Chair of “Fluid-Structure Interactions” session, Joint Conference of ASCE-EMD, ASME-AMD and SES, Charlottesville, Virginia, June 6-9, 1993.

Chair of “Fluid-Structure Interactions” session, ASCE Engineering Mechanics Conference, ASCE, College Station, Texas, May 24-27, 1992.

Chair of “Fluid-Structure Interactions”, ASCE Engineering Mechanics Conference, ASCE, Columbus, Ohio, May 20-22, 1991.

## **PUBLICATIONS**

### **Refereed Journal Papers**

64. Chu, T., Wang, K.H., Yang, M.-D., Chen, M.-C., and Syu, R.-H. (2017) “Development and Testing of Geostatistically Based Algorithms for Spatial Adjustment of Radar Rainfall Values at the Chenyulan River Watershed in Taiwan” (in preparation)
63. Chang, C.H. and Wang, K.H. (2017) “Numerical Analysis of Wave Propagation and Vortex Generation in Time-Dependent Viscous Fluid Flow over a Bottom Cavity” (in preparation)
62. Qiao, W., Wang, K.H., and Sun, Y. (2017) “Scattering of Water Waves by a Floating Body with Two Vertically Attached Porous Walls”, *Journal of Engineering Mechanics*. (Submitted for review)
61. Chen, Y.-H. and Wang, K.H. (2017) “Transient Curvilinear-Coordinate Based Fully Nonlinear Model for Wave Propagation and Interactions with Curved Boundaries”, *J. of Hydrodynamics*. (In review)
60. Chang, C.H., Lin, Chang, Wang, K.H., and Jaf, J.M. (2016) “Numerical Simulations and Experimental Visualizations of the Vortex Characteristics for a Solitary wave interacting with a bottom-mounted vertical plate”, *Journal of Hydro-environment Research*. (Accepted for publication)
59. Chang, C.H., Wang, K.H., and Hsieh, P.C. (2016) “Fully Nonlinear Model for Simulating Solitary Waves Propagating through a Partially Immersed Rectangular Structure”, *Journal of Coastal Research*. DOI:10.2112/JCOASTRES-D-16-00061.1
58. Lu, Xing and Wang, Keh-Han. (2015) “Modeling a Solitary Wave Interaction with a Fixed Floating Body Using an Integrated Analytical–Numerical Approach”, *Ocean Engineering*, Vol. 109, pp. 691-704.
57. Chu, T., Chang, C.H., and Wang, K.H. (2015) “Evolution of Induced Vortices and Transport of Fluid Particles under the Action of A Solitary Wave Passing Over a Trench”, *Coastal Engineering Journal*, Vol. 57(2), pp. 1550007-1 to 1550007-15.
56. Chang, C.H. and Wang, K.H. (2015) “Numerical Study on Three-dimensional Waves Produced by a Bottom Jet”, *Applied Ocean Research*, Vol. 50, pp. 141-154.



55. Jaf, J.M. and Wang, K.H. (2015) "Interaction of Solitary Waves with a Submerged Impermeable Breakwater." *Journal of Engineering Mechanics*, Vol. 141(9), pp. 4015030-1 to 4015030-10.
54. Wood, A. and Wang, K.H. (2015) "Modeling Dam-Break Flows in Channels with 90 Degree Bend Using an Alternating-Direction Implicit Based Curvilinear Hydrodynamic Solver", *Computers and Fluids*, Volume 114, pp. 254-264.
53. Turan, B. and Wang, K.H. (2014) "Modeling Interactions and Shoaling of Solitary Waves Using a Hybrid Finite Volume and Finite Difference Solver", *J. of Applied and Computational Mathematics*, Volume 3(5), pp. 1-8.
52. Turan, B. and Wang, K.H. (2014) "An Object-oriented Overland Flow Solver for Watershed Flood Inundation Predictions: Case Study of Ulus basin, Turkey", *J. of Hydrology and Hyomechanics*, Vol. 62(3), pp. 209-217.
51. Chang, C.H. and Wang, K.H. (2014) "A Solitary Wave Propagates through a Gap into a Channel with an Upward Step", *International Journal of Environmental Science and Development*, Vol. 5(5), pp. 467-472.
50. Kuo, J.C., Wang, K.H., and Chen, C. (2012) "Pros and Cons of Different Nitrogen Removal Unit (NRU) Technology", *J. of Natural Gas Science and Engineering*, Vol. 7, pp. 52-59.
49. Wang, K.H. and Altunkaynak, A. (2012) "Comparative Case Study of Rainfall-Runoff Modeling between SWMM and Fuzzy Logic Approach", *J. of Hydrologic Engineering*, Vol. 17(2), pp. 283-291.
48. Altunkaynak, A. and Wang, K.H. (2012) "Estimation of Significant Wave Height in Shallow Lakes using the Adaptive Kalman Filtering Technique", *Expert System with Application*, Vol. 39, pp. 2549-2559.
47. Chang, C.H., Chu, T., Wang, K.H., and Tang, C.J. (2011) "Study of Solitary-Wave-Induced Fluid Motions and Vortices in a Cavity Using a Two-Dimensional Viscous Flow Model", *J. of Engineering Mechanics*, ASCE, Vol. 137(11)(Nov), pp. 769-778.
46. Altunkaynak, A. and Wang, K.H. (2011) "A Comparative study of Hydrodynamic Model and Expert System Related Models for Prediction of Total Suspended Solids Concentrations in Apalachicola Bay", *J. of Hydrology*, Vol. 400, pp. 353-363.
45. Chang, C.H., Tang, C.J., and Wang, K.H. (2011) "Vortex Pattern and Wave Motion Produced by A Bottom Blunt Body Moving at A Critical Speed", *Computers & Fluids*, Vol. 44, pp. 267-278.
44. Chang, C.H. and Wang, K.H. (2011) "Generation of Three-Dimensional Fully Nonlinear Water Waves by a Submerged Moving Object", *J. of Engineering Mechanics*, ASCE, Vol. 137, pp. 101-112.
43. Hu, H.M. and Wang, K.H. (2011) "Modeling Flows and Sediment Concentrations along A Sloping Channel with A Submerged Outlet Using A Hybrid Finite-Analytic Approach", *Computers and Fluids*, Vol. 44, pp.9-22.
42. Wang, K.H., Dai, Z., and Lee, H. S. (2011) "Modeling Wave Run-up Along A Sloping or A Moving Wall boundary", *J. of Coastal Research*, Vol. 27(6)(Nov), pp. 1159-1169.
41. Altunkaynak, A. and Wang, K.H. (2010) "Triple diagram models for Prediction of Suspended Solid Concentration in Lake Okeechobee, Florida", *J. of Hydrology*, Vol. 387, pp. 165-175.
40. Lee, H.S., Kim, S.D., Wang, K.H., and Eom, S. (2009) "Boundary Element Modeling of Multidirectional Random Waves in A Harbor with A Rectangular Navigation Channel", *Ocean Engineering*, Vol. 36, pp. 1287-1294.
39. Zhong, Zhengyong and Wang, K.H. (2009) "Modeling Fully Nonlinear Shallow-Water Waves and Their Interactions with Cylindrical Structures" *Computers & Fluids*, Vol. 38, 1018-1025.
38. Wang, K.H., Yang, J.C., and Wu, C.W. (2008) "Three-Dimensional Modeling of Flood Induced Flows and Sediment Concentration in Shihmen Reservoir in Taiwan" *J. of Coastal Research* Special Issue, No. 52, pp. 71-78.

37. Wang, K.H., Li, W. and Lee, H.S. (2008) "Propagation and Transformation of Periodic Nonlinear Shallow-Water Waves in Basins with Selected Breakwater Systems", *Computers & Fluids*, Vol. 37, pp. 931-942.
36. Zhong, Zhengyong and Wang, K.H. (2008) "Time-accurate Stabilized Finite Element Model for Weakly Nonlinear and Weakly Dispersive Water Waves" *International Journal for Numerical Methods in Fluids*, Vol. 57, pp. 715-744.
35. Lee, H. S., Wang, K.H., and Williams, A.N. (2007) "A Three-dimensional Modeling of Multidirectional Random Wave Diffraction by Rectangular Submarine Pits", *Ocean Engineering*, Vol. 34, pp. 665-675.
34. Zhong, Zhengyong and Wang, K.H. (2006) "Solitary Wave interaction with a Concentric Porous Cylinder System", *Ocean Engineering*, Vol. 33, pp. 927-949.
33. Hu, Haming and Wang, K.H. (2005). "Damping Effect on Waves Propagating past a Submerged Horizontal and a Vertical Porous Wall", *Journal of Engineering Mechanics*, ASCE, Vol. 131, pp. 427-437.
32. Hu, H. and Wang, K.H. (2004) "A Hybrid Finite-Analytic Algorithm for Solving Three-dimensional Advection-Diffusion Equations", *International Journal of Computational Methods*, Vol. 1(3), December, pp. 407-430.
31. Wang, K.H., Teng, M. H., and Chen, H.-C. (2003) "Study of Environmental Fluid Mechanics Using State-Of-the-Art Experimental Techniques and Instrumentation", (Editorial), *Journal of Engineering Mechanics*, Vol. 129, pp.1107.
30. Wang, K.H., Shen, Q., and Zhang, B. (2003). "Modeling Propagation of Pressure Surges with the Formation of A Large Air Pocket in Pipelines", *Computers and Fluids*, Vol. 32, pp.1179-1194.
29. Wang, K.H., Jin, K.R., and Tehrani, M. (2003). "Field Measurement of Flow Velocities, Suspended Solids Concentrations and Temperatures in Lake Okeechobee", *Journal of the American Water Resources Association*, Vol. 39, pp 441-456.
28. Williams, A.N. and Wang, K.H. (2003). "A Flexible Porous Wave Barrier for Enhanced Wetlands Habitat Restoration", *Journal of Engineering Mechanics*, ASCE, Vol. 129, pp. 1-8.
27. Cheng, A. , Liu, C., Shen, H., Teng, M., Wang, K.H. (2002). "Fluid-Mechanics-An Essential Part of An Environmental Engineering Curriculum", *Journal of Professional Issues in Engineering Education & Practice*, ASCE, Vol. 128(4), pp. 201-205.
26. Hu, H.M., Wang, K.H., and Williams, A.N. (2002). "Wave Motion over A Breakwater System of A Horizontal Plate and A Vertical Porous Wall, *Journal of Ocean Engineering*, Vol. 29, pp. 373-386.
25. Mansour, A.M., Williams, A.N., and Wang, K.H. (2002). "The Diffraction of Linear Waves by A Uniform Vertical Cylinder with Cosine-Type Radial Perturbations", *Journal of Ocean Engineering*, Vol. 29, pp. 239-259.
24. Williams A.N., Li, W. and Wang, K.H. (2000). "Water Wave Interaction with A Floating Porous Cylinder", *Journal of Ocean Engineering*. Vol. 27, pp. 1-28.
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## **Lecture Note**

Title: Three-Dimensional Hydrodynamic and Transport Model.

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## **Technical Reports**

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## RESEARCH PRESENTATIONS

70. "Wave Simulation and Global Performance Analysis of Offshore Multi-Body Floating Systems and Connected Line Structures ", Marine Engineering College, Dalian Maritime University, Dalian, PRC, May 18, 2016. **(Invited Lecture)**
69. "Numerical Modeling of Multi-body Floating Systems with Large Stretching Line Structures Using ANCF", IAOE Technical Symposium 2016, Jan. 16, 2016, Houston, USA.
68. "Information on the Natural Disasters and Used for the Mitigation Planning and Management of Caused Damage, College of Information Science, Ling-Tung University, December 12, 2013. **(Invited lecture)**
67. "Low Impact Development", Department of Harbor and River Engineering, national Taiwan Ocean University, Taiwan, July 29, 2013. **(Invited presentation)**
66. "The Principles of Low Impact Development (LID), Case Studies and Its Benefits to the Drainage and Flood Mitigation", Water Resource Bureau, Tainan City, Taiwan, July 26, 2013 **(Invited lecture)**
65. "The Principles of Low Impact Development (LID), Case Studies and Its Effectiveness on the Drainage and Flood Mitigation", Construction and Planning Agency, Ministry of the Interior, Taiwan, July 22, 2013. **(Invited lecture)**
64. "Geostatistically Based Models for Adjustment of Radar Rainfall Data and Results from Application to Chenyulan River Watershed", 10<sup>th</sup> River Basin Management Bureau, Water Resources Agency, Ministry of Economic Affairs, Taiwan, July 15, 2013. **(Invited presentation)**
63. "Modeling Fully Nonlinear Shallow-Water Waves and Their Interactions with Cylindrical Structures", Center of Harbor & Marine Tech, Institute of Transportation, Ministry of Transportation and Communications, July 2, 2013, **(Invited presentation)**
62. "Traditional 2-D Spatial Rainfall Estimation and Geostatistically Based Adjustment of Radar Rainfall Data over the Chenyulan River Watershed", Department of Civil and Water Resources Engineering, National Chiayi University, Taiwan, Nov. 28, 2012. **(Invited presentation)**
61. "Traditional 2-D Spatial Rainfall Estimation and Geostatistically Based Adjustment of Radar Rainfall Data over the Chenyulan River Watershed", 4<sup>th</sup> River Management Office, Water Resources Agency, Taiwan, Nov. 29, 2012. **(Invited lecture)**
60. "Monitoring and Warning Systems for the Prevention of Flood Induced Disasters in US", at a workshop on Protection and Prevention of the Occurrence of Disasters Caused by Extreme Flooding Events, National Chung-Hsing University, Taiwan, Nov. 30, 2012. **(Invited lecture)**
59. "Modeling Flow Field and Non-Equilibrium Sediment Transport in Channels" 2011 ASCE Engineering Mechanics Institute Conference, Boston, MA, June 2-4, 2011.
58. "Periodic Nonlinear Shallow-Water Waves Induced Uplift Forces on a Horizontal Deck" 2011

- ASCE Engineering Mechanics Institute Conference, Boston, MA, June 2-4, 2011.
57. "Experimental Study of Solitary Wave Induced Fluid Motions in a Submerged Cavity", 2010 ASCE Engineering Mechanics Institute Conference, Los Angeles, CA, August 8-11, 2010.
  56. "Predictions of Total Suspended Solids Concentration in Apalachicola Bay using Expert System Related Models" 2010 ASCE Engineering Mechanics Institute Conference, Los Angeles, CA, August 8-11, 2010.
  55. "Interaction of a Solitary Wave with a Floating Body", 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 24-27, 2009.
  54. "Prediction of Wind Induced Significant Wave Height using Geno Kalman Filtering (GKF) technique", 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 24-27, 2009.
  53. "Three-Dimensional Modeling of Flood Induced Flows and Sediment Concentration in Shihmen Reservoir in Taiwan", Presented at the Ninth International Symposium on Fluid Control, Measurement and Visualization, Tallahassee, Florida, September 16-19, 2007.
  52. "Modeling Fully Nonlinear Shallow-Water Waves and Their Interactions with Cylindrical Structures" Presented at the Ninth International Symposium on Fluid Control, Measurement and Visualization, Tallahassee, Florida, September 16-19, 2007.
  51. "Formulations and Numerical Techniques for Flows and Sediment Transport Modeling" **Invited lecture** at the Research Center for Applied Sciences of the Academia Sinica in Taiwan, May 30, 2007.
  50. "Modeling Fully Nonlinear Shallow-Water Waves in A Domain of Variable Depth", Department of Hydraulic and Ocean Engineering, National Cheng-Kung University, Taiwan, July 10, 2006. (**Invited presentation**)
  49. "Diffraction of Multidirectional Random Waves by a Group of Rectangular Submarine Pits", Proceedings of the 15th U.S. National Congress on Theoretical and Applied Mechanics, Boulder, Colorado, June 25-30, 2006.
  48. "Modeling Fully Nonlinear Shallow-Water Waves in A Domain of Variable Depth", Department of Civil Engineering, Texas A&M University, College Station, Texas, November 18, 2005. (**Invited presentation**)
  47. "Hydrodynamic and Sediment Transport Modeling in Reservoirs", Round-Table Meeting on Natural Hazard Mitigation organized by National Chiao-Tung University and Water Resources Agency, Ministry of Economic Affairs, Taiwan, Sept. 2, 2005 (**Invited presentation**)
  46. "Hydraulic and Hydrodynamic Evaluation on Natural Hazards in Urban and Coastal Environments- Flood, Storm Surge, and Tsunami", Department of Civil Engineering, National Chiao-Tung University, Taiwan, July 28, 2005. (**Invited presentation**)
  45. "Modeling Propagation of Nonlinear Shallow-water Waves Using Volume of Fluid Method", Joint ASCE/ASME/SES Conference on Mechanics and Materials (McMat2005), Baton Rouge, Louisiana, June 1-3, 2005.
  44. "Hydraulic and Hydrodynamic Evaluation on Natural Hazards in Urban and Coastal Environments- Flood, Storm Surge, and Tsunami", 2005 Science, Engineering & Technology Seminar, Association of Chinese American Professionals, May 21, 2005. (**Invited presentation**)
  43. "Physical and Numerical Modeling of Air Hammer and Associated Hydraulic Transients in Sewer Pipes", Texas Section ASCE Fall Meeting, Houston, TX, Sep. 29-Oct. 2, 2004.
  42. "Modeling Propagation of Nonlinear Shallow-Water Waves past A Porous Barrier", 15<sup>th</sup> ASCE Engineering Mechanics Conference, Columbia University, New York City, NY, June 2-5, 2002.
  41. "Modeling Free-Surface Flow Using A Volume of Fluid Method", 2001 Mechanics and Materials Summer Conference, San Diego, CA, June 27-29, 2001.
  40. "Seasonal Variations of Flow Velocities and Suspended Sediment Concentrations in Lake

- Okeechobee”, 2001 Mechanics and Materials Summer Conference, San Diego, CA, June 27-29, 2001.
39. “Hydraulic Transients and Movement of Trapped Air in Sewers”, 14th ASCE Engineering Mechanics Conference, Austin, TX, May 21-24, 2000.
  38. “Three-Dimensional Modeling around A Submerged Orifice”, 14th ASCE Engineering Mechanics Conference, Austin, TX, May 21-24, 2000.
  37. “Modeling Suspended Sediment Transport in Open Channels”, 13th ASCE Engineering Mechanics Conference, Baltimore, MD, June 13-16, 1999.
  36. “Modeling Nonlinear Shallow-Water Waves and Associated Wave-Structure Interaction”, 12th Engineering Mechanics Conference, La Jolla, California, May 17-20, 1998.
  35. “Cnoidal Wave Forces on A Surface-Piercing Vertical Cylinder”, 12th Engineering Mechanics Conference, La Jolla, California, May 17-20, 1998.
  34. “Wave Interaction with Horizontal Plates and Caisson Wave Barrier”, 12th Engineering Mechanics Conference, La Jolla, California, May 17-20, 1998.
  33. “Simulation of Nonlinear Waves in Shallow-Water Basins”, Waves 98 Conference (1998 International OTRC Symposium), Houston, TX, April 30-May 1, 1998.
  32. “Propagation and Transformation of Nonlinear Shallow Water Waves in Irregular Basins”, Waves 97 International Conference, Virginia Beach, Virginia, Nov. 3-6, 1997.
  31. “Wave Motion over A Multiple-Plate Breakwater”, Waves 97 International Conference, Virginia Beach, Virginia, Nov. 3-6, 1997.
  30. “Hydraulic Transients and Associated Air Hammer in Sewers”, ASCE, Texas Section Fall Meeting, Arlington, TX, October 1-4, pp. 140-149, 1997.
  29. “Site Baseline and Corrective Measures Assessments for Water Resources Protection by Applying Ground Water and Surface Water Modeling”, 24th Annual Water Resources Planning and Management Conference, ASCE, Houston, TX, April 6-9, pp. 382-387, 1997.
  28. “A Boussinesq Model for A Wave-Current Interaction System”, 6th International Offshore and Polar Engineering Conference, Los Angeles, CA May 26-31, 1996.
  27. “Nonlinear Wave Interaction with Cylinder Arrays”, 6th International Offshore and Polar Engineering Conference, Los Angeles, CA May 26-31, 1996.
  26. “Physical Modeling to Determine Head Loss at Selected Surcharged Sewer Manholes”, North American Water and Environment Congress '96, Anaheim, CA, June 22-June 28, 1996.
  25. “Oblique Wave Interaction with Vertical Wall Structures”, 11th ASCE Engineering Mechanics Conference, Ft. Lauderdale, FL, May 19-22, 1996.
  24. “Three-Dimensional Moving Contact Line for an Accelerating Vertical Cylinder”, 11th ASCE Engineering Mechanics Conference, Ft. Lauderdale, FL, May 19-22, 1996.
  23. “Head Loss at Manholes in Surcharged Sewers”, ASCE, Texas Section Fall Meeting, El Paso, Texas, 1995.
  22. “Hydrodynamic and Salinity Transport Modeling in Estuaries”, National Symposium on Advances in Model Use and Development in Water Resources, American Water Resources Association 31st Annual Conference, Houston, Texas, November 5-9, 1995.
  21. “Simulation of the Flow Field at An Interconnected Riverine System”, 10th ASCE Engineering Mechanics Conference, Boulder, Colorado, May 21-24, 1995.
  20. “Three-Dimensional Nonlinear Shallow Water Wave Diffraction around a Vertical Cylinder”, International Symposium: Waves- Physical and Numerical Modeling, Vancouver, Canada, August 21-24, 1994.
  19. “Interactions of Solitary Waves with Cylinder Arrays”, 13th International Conference on Offshore Mechanics and Arctic Engineering, Houston, February 27-March 3, 1994.
  18. “Study of the Circulatory and Salinity Changes in Galveston Bay, Texas by Using A Three-

- Dimensional Hydrodynamic and Transport Model" Proceeding of the Eighth Symposium on Coastal and Ocean Management, New Orleans, Louisiana, July 19-23, 1993.
17. "Turbulent Mixing in Estuary ", ASCE-EMD, ASME-AM and SES Joint Conference, Charlottesville, Virginia, June 6-9, 1993.
  16. "Influence of Tides and Freshwater Inflows on the Circulation and Salinity Changes in Galveston Bay", ASCE/ASME/SES Joint Conference, Charlottesville, Virginia, June 6-9, 1993.
  15. "Water Waves on Annular Porous Cylinders ", ASCE-EMD, ASME-AM and SES Joint Conference, Charlottesville, Virginia, June 6-9, 1993.
  14. "Study of the Circulatory Change and Alteration of Salinity in Galveston Bay by Using a Three-Dimensional Hydrodynamic and Transport Modeling", ASCE, Texas Section Fall Meeting, Houston, Texas, October 2, 1992.
  13. "Three-Dimensional Circulation Modeling of the Coastal and Ocean Environments", ASCE Civil Engineering in the Oceans V Conference, College Station, Texas, November 2-5, 1992.
  12. "Flexible Porous Breakwater", ASCE Engineering Mechanics 9th Conference, College Station, Texas, May 24-27, 1992.
  11. "Numerical Modeling of the Flow Field at the Confluence of Buffalo Bayou and White Oak Bayou in Houston, Texas", invited speakers, Houston Branch, (Watershed and Drainage Technical Committee), ASCE, 1992.
  10. "Numerical Modeling of the Flow Field at the Confluence of Buffalo Bayou and White Oak Bayou in Houston, Texas", ASCE, Texas Section Fall Meeting, South Padre Island, Texas, 1991.
  9. "Modeling Storm Water Runoff in Bayou Chico", AWRA 27th Annual Conference on Water Management of River System, New Orleans, Louisiana, September 8-13, 1991.
  8. "Three-Dimensional Scattering of Solitary Waves by A Vertical Cylinder" Invited speaker, Ocean Engineering Seminar Series, Dept. of Civil Engineering, Texas A&M University, September 26, 1991. **(Invited presentation)**
  7. "Evolution of Nonlinear Long Waves after Interacting with A Breakwater", Engineering Mechanics Specialty Conference, Columbus, Ohio, May 20-22, 1991.
  6. "Three-Dimensional Circulation and Salinity Transport Model of Galveston Bay", Galveston Bay Characterization Workshop, Clear Lake, Texas, February 21-23, 1991.
  5. "On Numerical Strategies of Estuarine and Coastal Modeling", ASCE Estuarine and Coastal Modeling Conference, Newport, Rhode Island, November 15-17, 1989.
  4. "Diffraction of Solitary Waves by A Breakwater", Symposium in Fluid Dynamics in honor of Professor Theodore Yao-Tsu Wu, California Institute of Technology, Pasadena, California, August 17-18, 1989.
  3. "Three-Dimensional Scattering of Nonlinear Long Waves by a Vertical Cylinder", Seventh ASCE EMD Specialty Conference, Blacksburg, Virginia, May 23-25, 1988.
  2. "Flow around An Impulsively Starting Vertical Cylinder", ASCE Conference on Advancements in Aerodynamics, Fluid Mechanics, and Hydraulics, Minneapolis, Minnesota, 1986.
  1. "Nonlinear Impulsive Force on A Vertical Cylinder", 5th ASCE EMD Specialty Conf., 1984.

## **FUNDED RESEARCH GRANTS**

- 36 "Oil Spill Cleanup: Adsorbent Regeneration and Transport", Tianjin Research Institute for Water Transport Engineering, 9/1/2016-4/30/2018, \$35,000 (PI, 50%).
- 35 "Wake Wash in Sabine-Neches Waterway: Phase I", Sabine-Neches Navigation District through Lamar University, 2/4/2016-2/3/2017, \$17,000 (PI, 100%).
34. "Graduate Education in Civil Infrastructure Engineering." Department of Education, 9/01/2012-5/31/2017, \$399,798 (Co-PI, 14%)
33. "Assessment of the Effects of Regional Channel Stability and Sediment Transport on Roadway

- Hydraulics Structures.” Texas Department of Transportation. 9/01/2011–8/31/2013, \$39,728 (Co-PI, 50%)
32. “Evaluation of the uncertainty in flood control related flow modeling”, Harris County Flood Control District, 11/1/2010-12/31/2012, \$100,000 (PI, 100%)
  31. “Empirical Flow Parameters – A Tool for Hydraulic Model Validity Assessment”, Texas Department of Transportation, 9/1/2010-8/31/2013, \$86,136 (50%)
  30. “Research Experience for Undergraduates in Civil Infrastructure Engineering”, National Science Foundation, 3/1/2007 - 8/31/2010, \$257,547 (50%)
  29. “Doctoral Training in Infrastructure Engineering”, Department of Education, 8/15/2004-8/14/2009, \$498,132 (50%)
  28. “Guidance for Design in Areas of Extreme Bed Mobility”, Texas Department of Transportation, 9/1/2003 - 8/31/2008, \$297,891 (50%)
  27. “Screen Head Loss Testing”, Headworks, Inc., 8/1/2004 - 8/1/2005, \$8040 (100%)
  26. “Wind-Wave Data Collection for Lake Okeechobee”, South Florida Water Management District, 2/1/2002 - 1/31/2003, \$24,900 (100%)
  25. “CH3D Model Setup and Simulation Services (Phase II)”, Navy SPAWAR Systems Center/ San Diego State University Foundation, 1/15/2002 - 8/20/2002, \$24,348 (100%)
  24. “Porous Wave Barriers for Coastal Habitat Protection- A Coordinated Theoretical and Experimental Study”, Environmental Institute of Houston, 10/15/2000 - 8/31/2001, \$12,800 (50%).
  23. “CH3D Model Setup and Simulation Services (Phase I)”, Navy SPAWAR Systems Center/ San Diego State University Foundation, 8/24/2000 - 9/30/2001, \$17,391 (100%).
  22. “Screen Capture Rate Tests”, Headworks, 10/1/2000-9/30/2001, \$2,320 (100%).
  21. “Hydrodynamic Data Collection for the Lake Okeechobee Hydrodynamic Model Validation”, South Florida Water Management District, 11/19/1999 -11/18/2000, \$100,000 (100%).
  20. “Modeling Discharge Mixing for Uniform National Discharge Standards in Navy Harbors”, Navy SPAWAR Systems Center, 9/23/1999 - 9/30/2000, \$24,540 (100%).
  19. “Enhanced Wetlands Habitat Restoration Through Use of A Flexible Porous Wave Barrier - An Experimental Verification”, Environmental Institute of Houston, 10/15/1999 - 8/31/2000, \$4,500 (100%).
  18. “Intelligent Renewal of Urban Wastewater Systems”, National Science Foundation, 9/1/1995-8/31/1999, \$911,195 (10%).
  17. “Intelligent Renewal of Urban Wastewater Systems”, Montgomery Watson Americas, Inc./City of Houston, 5/1/1996-8/31/1999, \$ 420,000 (15%).
  16. “Development of An Oil Spill Simulator Using the Geographic Information System”, Energy Laboratory, University of Houston, January, 1998-August, 1998, \$6,600 (100%).
  15. “Evaluation of the Impacts, Performance, and Costs of Storm Water Pollution Prevention Plans (SW3P) as Applied to Highway Construction Activities”, Texas Department of Transportation, September, 1995-August, 1998, \$362,000 (50%).
  14. “Numerical & Experimental Validation of a New Ringing Design Procedure for Deepwater Offshore Platforms”, Texas Higher Education Coordinating Board, Advanced Technology Program, January, 1996- August 1998, \$41,011 (50%).
  13. “Stability Analysis for A Floating Platform”, Zentech Incorporated, March, 1997-June, 1997, \$5,344 (100%).
  12. “Verification of A Nonlinear Dispersive Wind-Wave Model for Lake Okeechobee”, South Florida Water Management District, March, 1996-August, 1997, \$15,600 (100%).
  11. “An Integrated Groundwater and Surface-Water Model for Contaminant Transport Prediction in Industrial Ship Channels”, Energy Laboratory, University of Houston, January, 1996-August, 1996, \$5,620 (100%).

10. "Statistical Data Analysis to Re-Rate the Influent Organic Loading for the City of Houston's Wastewater Treatment Facilities", Espey Huston/City of Houston, January 15-August 31, 1996, \$12,560 (100%)
9. "Development of A New Wind-Wave Model for Lake Okeechobee", South Florida Water Management District, April, 1995- July, 1996, \$20,800 (100%).
8. "Evaluating Protective Coatings for Concrete Pipes", City of Houston- Greater Houston Wastewater Program, June, 1995 - July, 1996, \$ 105,404 (33%).
7. "Physical Modeling to Determine Head Loss at Selected Surcharged Sewer Manholes" City of Houston-Greater Houston Wastewater Program, February, 1994- August, 1995, \$79,028 (50%).
6. "Characterization of the Estuarine Circulation in the Corpus Christi Bay System", Energy Laboratory, University of Houston, January, 1995-August, 1995, \$3,000 (100%).
5. "Hydrodynamic Interactions of Periodic Nonlinear Shallow Water Waves with Cylinder Arrays", University of Houston, Limited Grant-In-Aid Program, March, 1994-August, 1994, \$2,000 (100%)
4. "Influence of Tides, Freshwater Inflows and Bathymetry on the Circulation, Salinity and Related Water Quality Change in Galveston Bay", Energy Laboratory, University of Houston, January, 1993-August, 1993, \$4,334 (100%).
3. "Nonlinear Waves Interactions and Hydrodynamic Loads on Cylinder Arrays", University of Houston, President's Research Enhancement Program, June, 1992- May, 1993, \$4,400 (100%).
2. "A Three-Dimensional Hydrodynamic Flow and Transport Model of the Confluence of Buffalo Bayou and White Oak Bayou in Houston, Texas", Harris County Flood Control District, November 1, 1990- February 1, 1992, \$61,200 (50%).
1. "Nonlinear Wave Forces on Multiple Cylinders", Houston Area Research Center, August, 1990- December, 1990, \$45,000 supercomputer time. (100%)

## **ACADEMIC, PROFESSIONAL AND COMMUNITY SERVICE ACTIVITIES**

### ACADEMIC SERVICE

#### University

Library Liaison (1990-1993)

#### College of Engineering

College Grievance Committee (2007-2013, 2016-present)

College Graduate Standards Committee (2009-present)

College Academic Honesty Committee (2007-09)

College Teaching Award Committee (2006-07, 2007-08)

College Promotion and Tenure Committee (2004-2007)

Departmental Representative- Research Council (2004-2005)

Departmental Representative - PROMES (1994- present)

Lectured in PROMES Summer Engineering Seminar Series (summer 1995-2002, 2007-2008)

#### Department

Director of Civil Engineering Graduate Program (2006-present)

CEE Graduate Program Committee (2010- present)

Mentorship of Junior Faculty (2015-present)

Departmental Strategic Planning Committee (2009-2013)  
Faculty Search Committee (2003-2006, 2007-08, Chair 2004-2006, 2009-2011, 2015-2016)  
Full Professors Committee (2004-Present)  
CEE P&T committee (2012)  
Scholarship Committee (1991-1994, Chair 1993-1994, 2008-2013, 2016-present)  
American Society of Civil Engineers (ASCE) student chapter advisor (1994-2005)  
CEE Faculty Evaluation Committee (1997-1999, Chair 1999, 2004-2006)  
CEE Webpage Committee (2004-2009)  
Wave Tank Project (1994-1995): Involved with design and construction of a new, 4-ft high, 4-ft wide and 120-ft long wavetank facility.  
Routinely served as a departmental representative in guiding laboratory tour and demonstration of fluids experiments during the visits of high school student councilors and students (Cougar Preview and various open house events)

## PROFESSIONAL SERVICE

### Organizational Memberships and Committee Activities

American Society of Civil Engineers (ASCE).

Chair (Oct. 2000- Sept. 2002); Vice-Chair (Oct. 1998- Sept. 2000, Oct. 2002-Sept. 2004);  
Member (Oct.1986 – 2013) --ASCE Engineering Mechanics Division, Fluids  
Committee

Chair (Oct. 2010- present); Vice-Chair (Oct. 2009-Sept. 2010); Member (1993-present) --  
ASCE Engineering Mechanics Division, Turbulence Committee

Control member (Sept. 1999- 2006), ASCE Waterway, Port, Coastal and Ocean Division,  
Waves and Wave Forces Committee (and later Oceans and Offshore Engineering  
Committee).

Chair: (Sept. 1992-Sept. 1998), ASCE Waterway, Port, Coastal and Ocean Division, Waves  
and Wave Forces Committee.

Committee members: Fluid Dynamics Committee, ASCE-EMI (2014- present)  
Urban Drainage Standards Committee, ASCE-EWRI (2012-present)

### Organizing Committee for National and International Conferences

2012 Joint Conference of the Engineering Mechanics Institute & 11th ASCE Joint  
Specialty Conference on Probabilistic Mechanics and Structural Reliability (EMI-  
PMC 2012), June 17-20, 2012, Notre Dame, IN.

2011 ASCE Engineering Mechanics Institute Conference, Boston, MA, June 2-4, 2011.  
The Theodore Y. Wu Symposium on Engineering Mechanics, 23rd International  
Conference on Offshore Mechanics and Arctic Engineering, Vancouver, Canada,  
June 20-25, 2004.

16<sup>th</sup> Engineering Mechanics Conference, to be held at University of Washington, Seattle,  
July 16-18 in 2003.

15<sup>th</sup> Engineering Mechanics Conference, Columbia University, New York City, NY, June  
2-5, 2002.

2001 Mechanics and Material Conference, San Diego, CA, June 27-29, 2001.

Waves 98 on Ocean Wave Kinematics, Dynamics and Loads on Structures, held in  
Houston, TX, April 30-May 1, 1998.

Waves 97 International Conference, held in Virginia Beach, Virginia, Nov. 3-6, 1997

### Organizing technical sessions for the national meeting



Annual ASCE Engineering Mechanics Division (Engineering Mechanics Institute)  
Conference (1991-1993, 1995-1996, 1998-2000, 2002 (7 sessions), 2003, 2010,  
2011, 2012)  
2001 Mechanics and Material Conference, San Diego, CA, June 27-29, 2001 (four sessions)  
AWRA 1995 Annual Conference (one session)

#### Paper Review

Journal of Fluid Mechanics  
Journal of Engineering Mechanics, ASCE.  
Journal of Waterway, Port, Coastal and Ocean Engineering, ASCE.  
Journal of Hydraulic Engineering, ASCE.  
Journal of Hydrologic Engineering, ASCE  
Applied Ocean Research.  
Wave Motion  
Journal of International Society of Offshore and Polar Engineering.  
Journal of Offshore Mechanics and Arctic Engineering, ASME  
Ocean Engineering  
Computers and Fluids  
Journal of thin-walled structures  
Journal of Coastal Research

#### COMMUNITY SERVICE

Mentor of a middle school (TH Rogers) robotic team for the All Earth EcoBot Challenge competition,  
Feb-April, 2010.  
Advisor of Chinese Youth Society, Chinese Community Center (September 2002-2004)  
Chair of Cheng Kung University Alumni Association of Houston Scholarship Committee (2001-2006)  
Board member, Chinese Community Center, (December 1998-2001)  
President, Chinese Community Center Chinese School PTA, (September 1998-June 1999).  
Judge for the Bellaire Forensic Tournament, Oct. 25, 1997.  
Mentor, Reagan High School SuperQuest 1993, 1994 team.  
Reagan High School's 1993 SuperQuest team was a winner of the national SuperQuest  
competition. Project title: Mitigating The Forces of Coastal Erosion.

#### **CONSULTING ACTIVITIES**

Consulting for Robert L. Wright & Associates, Inc. on the topic of "Determination of storm surges  
induced hydrodynamic forces on coastal structures" (2010)  
Consulting for Quantum Bit by reviewing a pumping design for a liquid-gas separation system. (2010)  
Conduct flow simulation for the project "Hydrodynamic Modeling of a Constructed Saltwater Marsh  
adjacent to the Houston Ship Channel", Radian International. (10/1/98-3/31/99)  
Conduct storm surge analysis for the project "Feasibility Study of Offatts Bayou Crossing and  
Reasonable Alternatives", Sylva Engineering Corporation. 10/1/1997-8/31/1998.  
Developed a numerical model to simulate tidal influence on net surface water flow and transport of  
concentration at the Texas City Industrial Channel for ENSR Consulting and Engineering, 1992.