PHILL-SEUNG LEE

Computational Mechanics and Structural Systems Lab.
Department of Mechanical Engineering
Korea Advanced Institute of Science and Technology
219 Daehak-ro Yuseong-gu Daejeon 34141 Korea
(E-mail) phillseung@kaist.edu, (Web) cmss.kaist.ac.kr
(Tel) 82-42-350-1512, (Fax) 82-42-350-1510

RESEARCH INTERESTS

Computational Mechanics, Ocean Structures, Hydrodynamics, Experimental Biology

TEACHING INTERESTS

Finite Element Method, Solid and Structural Mechanics, Fluid-Structure Interaction

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA
Ph.D. Department of Civil and Environmental Engineering. (Sep 2000 - Sep 2003, Degree awarded: Feb 2004)
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea
M.S. Department of Civil and Environmental Engineering. (Mar 1997 - Feb 1999)
Hanyang University, Seoul, Korea
B.S. Department of Civil Engineering. (Mar 1990 - Feb 1997, Military service: Dec 1991 - Mar 1994)

EXPERIENCE

Korea Advanced Institute of Science and Technology, Daejeon, Korea
Associate Professor. Department of Mechanical Engineering. (Mar 2015 -)
Associate Professor. Division of Ocean Systems Engineering. (Feb 2009 - Feb 2015)
Samsung Heavy Industries, Seoul, Korea
Manager. Marine Concrete Structure Team. (Oct 2005 - Jan 2009)
McGill University, Montreal, QC, Canada
Postdoctoral Researcher. Department of Civil Engineering and Applied Mechanics. (May 2004 - Aug 2005)
Massachusetts Institute of Technology, Cambridge, MA, USA
Postdoctoral Researcher. Department of Mechanical Engineering. (Nov 2003 - Apr 2004)
Korea Institute of Construction Technology, Kyunggi, Korea
Researcher. Structural System Group. (Aug 1999 - Jun 2000)

PUBLICATIONS

Corresponding authors are underlined.

Articles in International Journals

1. Ko YB, Lee PS, Bathe KJ. The MITC4 shell finite element and its performance. Computers & Structures, accepted.
2. Boo SH, Kim JG, Lee PS. Error estimation for the automated multi-level substructuring method. International Journal for Numerical Methods in Engineering, published online, Dec 2015.
3. Boo SH, Kim JG, Lee PS. A simplified error estimator for the CB method and its application to error control. Computers & Structures, 164, 53-62, Feb 2016.
4. Yoon K, Lee PS, Kim DN. Geometrical nonlinear finite element analysis of functionally graded 3D beams considering warping effects. Composite Structures, 132, 1231-1247, Nov 2015.
5. Lee KH, Kim MG, Lee JI, Lee PS. Recent advances in ocean nuclear power plants. Energies, 8(10), 11470-11492. Oct 2015.
6. Kim J, Kim JG, Yun G, Lee PS, Kim DN. Towards modular analysis of supramolecular protein assemblies. Journal of Chemical Theory and Computation, 11(9), 4260-4272, Sep 2015.
7. Kim JG, Lee PS. Posteriori error estimation method for flexibility-based component mode synthesis. AIAA Journal, 53(10), 2828-2837, Sep 2015.
8. Lee KH, Cho S, Kim KT, Kim JG, Lee PS. Hydroelastic analysis of floating structures with liquid tanks and comparison with experimental tests. Applied Ocean Research, 52, 167-187, Aug 2015.
9. Kim JG, Lee PS. An enhanced Craig-Bampton method. International Journal for Numerical Methods in Engineering, 103, 79-93, Jul 2015.
10. Lee Y, Jeon HM, Lee PS, Bathe KJ. The modal behavior of the MITC3+ triangular shell element. Computers & Structures, 153, 148-164, Jun 2015.
11. Kim JG, Boo SH, Lee PS. An enhanced AMLS method and its performance. Computer Methods in Applied Mechanics and Engineering, 287, 90-111, Apr 2015.
12. Jeon HM, Lee Y, Lee PS, Bathe KJ. The MITC3+ shell element in geometric nonlinear analysis. Computers & Structures, 146, 91-104, Jan 2015.
13. Kim YY, Choi KJ, Chung H, Han S, Lee PS. A ship-to-ship automatic docking system for ocean cargo transfer. Journal of Marine Science and Technology, 19, 360-375, Dec 2014.
14. Yoon K, Lee PS. Nonlinear performance of continuum mechanics based beam elements focusing on large twisting behaviors. Computer Methods in Applied Mechanics and Engineering, 281, 106-130, Nov 2014.
15. Kim MG, Lee KH, Lee PS, Kim SG, Woo IG, Han JH, Lee JI, Conceptual studies of construction and safety enhancement of ocean SMART mounted on GBS. Nuclear Engineering and Design, 278, 558-572, Oct 2014.
16. Kim JG, Lee PS. An accurate error estimator for Guyan reduction. Computer Methods in Applied Mechanics and Engineering, 278, 1-19, Aug 2014.
17. Kim JG, Lee KH, Lee PS. Estimating relative eigenvalue errors in the Craig-Bampton method. Computers & Structures, 139, 54-64, Jul 2014.
18. Lee Y, Lee PS, Bathe KJ. The MITC3+ shell finite element and its performance. Computers & Structures, 138, 12-23, Jul 2014.
19. Yoon JS, Cho SP, RG Jiwinangun, Lee PS. Hydroelastic analysis of floating plates with multiple hinge connections in regular waves. Marine Structures, 36, 65-87, Apr 2014.

20. Jeon HM, Lee PS, Bathe KJ. The MITC3 shell finite element enriched by interpolation covers. Computers & Structures, 134, 128-142, Apr 2014.
21. Kim JG, Cho S, Kim KT, Lee PS. Hydroelastic design contour for the preliminary design of very large floating structures. Ocean Engineering, 78, 112-123, Mar 2014.
22. Yoon K, Lee PS. Modeling the warping displacement fields for discontinuously varying arbitrary cross-section beams. Computers & Structures, 131, 56-69, Jan 2014.
23. Kim KT, Lee PS, Park KC. A direct coupling method for 3D hydroelastic analysis of floating structures. International Journal for Numerical Methods in Engineering, 96(13), 842-866, Dec 2013.
24. Hong WT, Lee PS. Coupling flat-top partition of unity method and finite element method. Finite Elements in Analysis and Design, 67, 43-55, May 2013.
25. Lee S, Kim CH, Kim DG, Kim HG, Lee PS, Myung H. Remote guidance of untrained turtles by controlling voluntary instinct behavior. PLOS ONE, 8(4), Apr 2013.
26. Hong WT, Lee PS. Mesh based construction of flat-top partition of unity. Applied Mathematics and Computation, 219(16), 8687-8704, Apr 2013.
27. Lee K, Lee KH, Lee JI, Jeong YH, Lee PS. A new design concept for offshore nuclear power plants with enhanced safety features. Nuclear Engineering and Design, 254, 129-141, Jan 2013.
28. Yoon K, Lee Y, Lee PS. A continuum mechanics based 3-D beam finite element with warping displacements and its modeling capabilities. Structural Engineering and Mechanics, 43(4), 411-437, Sep 2012.
29. Lee Y, Yoon K, Lee PS. Improving the MITC3 shell finite element by using the Hellinger-Reissner principle. Computers & Structures, 110-111, 93-106, Sep 2012.
30. Thanh CD, Zi G, Lee PS, Rabczuk T, Song JH. Phantom-node method for shell models with arbitrary cracks. Computers & Structures, 92-93, 242-256, Feb 2012.
31. Kim YY, Choi KJ, Chung H, Lee PS. Axiomatic design study for automatic ship-to-ship mooring system for container operations in open sea. Ocean Systems Engineering, 1(2), 157-169, Jun 2011.
32. Bathe KJ, Lee PS. Measuring the convergence behavior of shell analysis schemes. Computers & Structures, 89(3-4), 285-301, Feb 2011.
33. Lee PS, Noh HC. Inelastic buckling behavior of steel members under reversed cyclic loading. Engineering Structures, 32(9), 2579-2595, Sep 2010.
34. Lee PS, Bathe KJ. The quadratic MITC plate and MITC shell elements in plate bending. Advances in Engineering Software, 41(5), 712-728, May 2010.
35. Noh HC, Lee PS, Choi CK. Variability of displacements and stresses at random variable state. Structural Engineering and Mechanics, 31(6), 751-754, Apr 2009.
36. Lee PS, Noh HC, Choi CK. Geometry-dependent MITC method for a 2-node iso-beam element. Structural Engineering and Mechanics, 29(2), 203-221, May 2008.
37. Noh HC, Lee PS. Higher order weighted integral stochastic finite element method and simplified first-order application. International Journal of Solids and Structures, 44(11-12), 4120-4144, Jun 2007.
38. Lee PS, McClure G. Elastoplastic large deformation analysis of a lattice steel tower structure and comparison with full-scale tests. Journal of Constructional Steel Research, 63(5), 709-717, May 2007.
39. Lee PS, Noh HC, Bathe KJ. Insight into 3-node triangular shell finite elements: the effects of element isotropy and mesh patterns. Computers & Structures, 85(7-8), 404-418, Apr 2007.

40. Lee PS, McClure G. A general 3D L-section beam finite element for elastoplastic large deformation analysis. Computers & Structures, 84(3-4), 215-229, Jan 2006.
41. Lee PS, Bathe KJ. Insight into finite element shell discretizations by use of the "basic shell mathematical model." Computers & Structures, 83(1), 69-90, Jan 2005.
42. Lee PS, Bathe KJ. Development of MITC isotropic triangular shell finite elements. Computers & Structures, 82(11-12), 945-962, May 2004.
43. Bathe KJ, Chapelle D, Lee PS. A shell problem 'highly-sensitive' to thickness changes. International Journal for Numerical Methods in Engineering, 57(8), 1039-1052, Jun 2003.
44. Bathe KJ, Lee PS, Hiller JF. Towards improving the MITC9 shell element. Computers & Structures, 81(8-11), 477-489, May 2003.
45. Lee PS, Bathe KJ. On the asymptotic behavior of shell structures and the evaluation in finite element solutions. Computers & Structures, 80(3-4), 235-255, Feb 2002.
46. Choi CK, Lee PS, Park YM. Defect-free 4-node flat shell element: NMS-4F element. Structural Engineering and Mechanics, 8(2), 207-231, Aug 1999.

Articles in International Journals (under review**)**

47. Park SG, Jeong YC, Kim DG, Lee MH, Shin A, Park G, Kim CH, Lee PS, Kim D. Steering behavior using an object-craving circuit in mice. Nature Biotechnology.
48. Kim J, Boo SH, Lee PS. A higher order Craig-Bampton method. Computer Methods in Applied Mechanics and Engineering.
49. Kim SY, Lee PS. Modeling of helically stranded cables using multiple beam elements and its application to the torque balance design. Construction and Building Materials.
50. Boo SH, Lee PS. A dynamic condensation method using algebraic substructuring. International Journal for Numerical Methods in Engineering.
51. Kim CH, Kim DG, Kim D, Lee PS. Directing turning behavior of carp using virtual stimulation. Experimental Biology.
52. Lee KH, Lee PS. Nonlinear hydrostatic analysis of flexible floating structures. Applied Ocean Research, revised.
53. Kim JG, Boo SH, Lee CO, Lee PS. On the computational efficiency of the error estimator for Guyan reduction. Computer Methods in Applied Mechanics and Engineering, revised.
54. Yoon K, Kim DN, Lee PS. Nonlinear torsional analysis of 3D composite beams using the extended St. Venant solutions. Computational Mechanics.
55. Kim JG, Markovic D, Lee PS, Park KC. High-fidelity flexibility based CMS method with interface degrees of freedom reduction. AIAA Journal, revised.
56. Kim CH, Choi B, Kim DG, Lee S, Lee PS, Jo S. Remote navigation of turtle by controlling instinct behavior via human brain-computer interface. Journal of Bionic Engineering, revised.
57. Kim DG, Lee S, Kim CH, Jo S, Lee PS. Parasite robot system for turtle's waypoint navigation. Journal of Bionic Engineering.
58. Kim JG, Lee PS, Park KC. A mode selection method for accurate reduction of FE models in component mode synthesis. Computer Methods in Applied Mechanics and Engineering, under revision.

Articles in Domestic Journals

1. Kim JY, Yoon JS, Lee PS, Kim YS. Damage assessment of bridges caused by Tsunami. Journal of KOSHAM, 15(3), 1-8, Jun 2015.
2. Lee JH, Yoon SJ, Chung H, Lee PS. The conceptual design of semi-submersible type mobile harbor using axiomatic design principles. Journal of Korea Society of CAD/CAM Engineers, 15(3), 189-203, Jun 2010.
3. Zi G, Kim JG, Lee SO, Lee PS. Development of a design chart for the initial design stage of very large floating structures. Journal of KSCE, 30(2B), 315-324, May 2010.
4. Lee PS, Noh HC. On the finite element analysis of shell structures. Journal of KSCE, 27(3A), 277-289, May 2007.
5. Noh HC, Lee PS. Random variable state and response variability. Journal of KSCE, 26(6A), 1001-1011, Nov 2006.
6. Choi CK, Lee PS, Park YM. A 4-node non-conforming flat shell element with drilling degree of freedom. Journal of KSCE, 19(I-5), 663-673, Sep 1999.

Books

1. Lee PS. Advanced Analysis of Solids and Structures, 2012.
2. Lee PS, Chung H, Oh IK, Cho YW. Lee YS. Introduction to Ocean Renewable Energies, 2012

PRESENTATIONS

Corresponding authors are underlined.

Conference Proceedings & Presentations

1. Boo SH, Oh MH, Lee PS. A multi-level static condensation method for local analysis, WCCM 2016.
2. Yoon K, Lee PS, Kim DN. On elastoplastic torsional analysis of composite beam, WCCM 2016.
3. Lee KH, Kim YH, Lee PS. Hydrodynamic analysis of floating structures with baffled sloshing tanks, ISOPE 2016.
4. Yoon K, Lee PS, Kim DN. Finite element formulation for functionally graded beam structures. The 3rd International Conference on Computational Design in Engineering, Dec 2015.
5. Lee PS, Y Lee, K Yoon. Recent developments on shell and beam finite elements. KAIST-Tsinghua Joint Workshop, Dec 2015.
6. Kim J, Kim JG, Yun G, Lee PS, Kim DN. Modular analysis of supramolecular protein using finite element method. KSME (Korean Society of Mechanical Engineers) conference, Nov 2015.
7. Lee KH, Lee PS. Our Contribution to Model Reduction Technology, SNU-KAIST Computational Mechanics Workshop, Oct 2015.
8. Boo SH, Lee PS. Fluid-Structure Interaction in Ocean Engineering, SNU-KAIST Computational Mechanics Workshop, Oct 2015.
9. Lee KH, Lee PS. Nonlinear hydrostatic analysis of deformable floating structures. The 7th International Conference on Hydroelasticity in Marine Technology (HYEL2015), Sep 2015.
10. Kim SH, Choi GG, Lee PS. A new concept of blast hardened bulkheads: feasibility study of aluminum, foam attached BHBs. 2015 International Conference on International Conference on Ocean Systems Engineering (ICOSE2015), Aug 2015.

11. Kim HJ, Yoon K, Kim DN, Lee PS. Modeling capability of continuum mechanics based beam elements. 2015 International Conference on Innovative Structural Engineering & Mechanics (ISEM2015), Aug 2015.
12. Ko YB, Lee PS. Reducing the membrane locking in the MITC4 shell element. 2015 International Conference on Innovative Structural Engineering & Mechanics (ISEM2015), Aug 2015.
13. Kim JG, Boo SH, Lee PS. Performance of the enhanced Craig-Bampton method. 2015 International Conference on Innovative Structural Engineering & Mechanics (ISEM2015), Aug 2015.
14. Lee Y, Lee PS. Convergence behavior of the MITC3+ triangular shell element. 2015 International Conference on Innovative Structural Engineering & Mechanics (ISEM2015), Aug 2015.
15. Lee PS, Lee Y, Yoon K. Towards improving shell and beam finite elements. Keynote lecture in 2015 International Conference on Innovative Structural Engineering & Mechanics (ISEM2015), Aug 2015.
16. Seo HD, Y Kim, OJ Kwon, PS Lee. Coupled dynamic analysis for floating wind turbines. DTU-KAIST symposium, Aug 2015.
17. Cho S, Lee KH, Lee PS. Hydroelastic experiment of a floating structure with liquid tanks. The 8th Euro-Korean Conference on Science and Technology (EKC 2015), Strasbourg, France, Jul. 2015
18. Lee DH, Seo HD, Boo SH, Lee PS. New design concept of floating wind turbine platform, KAEA (Korea Wind Energy Association) conference, Jun 2015.
19. Kim JH, Yoon K, Lee PS. Hydroelastic analysis of long span submerged floating tunnels under seismic loads, ECCOMAS MSF 2015: The 2nd International Conference on Multi-scale Computational Methods for Solids and Fluids, Jun 2015.
20. Kim JG, Boo SH, Lee PS. Improving dynamic substructuring methods. KSNVE (Korean Society for Noise and Vibration Engineering) conference, Apr 2015.
21. Yoon JS, Lee PS. Hydro-elastoplastic analysis of floating plates in waves. The 30th International Workshop on Water Waves and Floating Bodies (IWWWFB2015), Apr 2015.
22. Lee KH, Boo SH, Kim JG, Lee PS. Nonlinear hydrostatic analysis of elastic floating bodies. COSEIK Symposium-spring, Apr 2015.
23. Boo SH, Lee KH, Kim JG, Lee PS. Error estimation technique for the AMLS method. COSEIK Symposium-spring, Apr 2015.
24. Kim H, Yoon K, Lee PS. A new method for modeling interlayer slips in 3D beam analysis. COSEIK Symposium-spring, Apr 2015.
25. Kim J, Kim JG, Yun G, Lee PS, Kim DN. Application of component mode synthesis in protein dynamics. COSEIK Symposium-spring, Apr 2015.
26. Yoon K, Kim H, Kim DN, Lee PS. Improving the nonlinear performance of Timoshenko beam elements by using the eigen-recomposition method. COSEIK Symposium-spring, Apr 2015.
27. Kim JY, Kim YS, Yoon JS, Lee PS. 3D numerical analysis of Imwon port for estimating Tsunami wave forces. KOSHAM (Korean Society of Hazard Mitigation) conference, Feb 2015 (awarded).
28. Lee KH, Lee PS, Kim MG, Lee JI. Concept design and safety features of nuclear power plants mounted on gravity based structures. Invited in the 10th International Topical Meeting on Nuclear Thermal-Hydraulics, Operation and Safety (NUTHOS-10), Dec 2014.
29. Kim JG, Boo SH, Lee PS. Enhanced automated multi-level substructuring method. 2014 Symposium on Multiscale & Multiphysics Mechanics (MMM'14), Dec 2014.

30. Kim SH, Choi GG, Lee PS. Analysis of aluminum foam attached blast hardened bulkheads and comparison with chamber model blast tests. Battleship technology seminar, Oct 2014.
31. Kim JH, Lee PS. Hydroelastic analysis of submerged floating tunnel. The First SJTU-U.Tokyo-KAIST symposium. Sep 2014.
32. Lee KH, Son YJ, Lee PS. Preliminary design procedure of baffled anti-roll tanks. The First SJTU-U.Tokyo-KAIST symposium. Sep 2014.
33. Yoon K, Lee PS. A continuum mechanics based beam finite element for geometric and material nonlinear analysis. International Conference on Computational Structures Technology (CST2014), Sep 2014.
34. Lee KH, Kim S, Lee PS. Extreme roll motion assessment of ART equipped floating structures by spectral analysis. 2014 International Conference on Advances in Coupled Systems Mechanics (ACSM14), Aug 2014.
35. Yoon JS, Lee PS. Assessment of damages to civil engineering structures caused by Tsunami. International seminar on Tsunami, COSEIK, Aug 2014.
36. Cho SP, Boo SH, Lee KH, Lee PS. New floating body concepts for floating wind turbines. DTU-KAIST symposium, Jun 2014.
37. Kim SH, Ko YB, Lee PS. Shock response analysis of aluminum form attached blast hardened bulkheads. KAOSTS conference, May 2014.
38. Han SH, Shin YS, Lee PS, Chung H, Na YS, Choi GG. Design and technology development of blast bulkhead structures. KAOSTS conference, May 2014.
39. Lee PS. Development state and future prospect of ocean nuclear systems. KAOSTS conference, May 2014.
40. Jeon HM, Yoon K, Lee PS. Development of the enriched MITC3 shell finite element. KSME conference, Apr 2014.
41. Yoon K, Jeon HM, Lee PS. Introduction to continuum mechanics based beam elements. KSME conference, Apr 2014.
42. Kim JH, Seo SI, Sagong M, Lee PS. Hydroelastic analysis of submerged floating tunnels under seismic loads. Korean Society for Noise and Vibration Engineering (KSNVE) conference, Apr 2014.
43. Kim JG, Lee PS. Reliability estimation of reduced-order models. Korean Society for Noise and Vibration Engineering (KSNVE) conference, Apr 2014.
44. Lee PS, Lee KH, Kim KT. A direct coupling method for hydroelastic analysis. Ship hydrodynamics research association conference, Feb 2014.
45. Zhang B, Kim S, Boo SH, Cho SP, Lee PS. A new construction method for ships and its feasibility. SNAK Conference, Nov 2013.
46. Yeo S, Yoon K, Lee PS, Hong Y, Cha JH, Chung H. Ballasting plan optimization for accuracy control on offshore floating dock. The 12th International Symposium on Practical Design of Ships and Other Floating Structures (PRADS), Oct 2013.
47. Park HW, Markovic D, Kim JG, Lee PS, Park KC. Flexiblity-based structural component mode synthesis: Its history, promise and future potential. The 26th Nordic Seminar on Computational Mechanics, Oct 2013.
48. Choi SP, Kim JG, Lee PS. Hydroelastic design contour for the preliminary design of pontoon-type rectangular VLFS. UT-KAIST Symposium, Aug 2013.

49. Lee KH, Kim S, Kim HJ, Lee PS. A 3D hydroelastic analysis of floating barge with sloshing in water waves. UT-KAIST Symposium, Aug 2013.(Best poster award)
50. Lee KH, Lee PS. GBS mounted offshore nuclear power plant. The Second Joint SJTU-KAIST Research Symposium, Aug 2013.
51. Kim DG, Kim CH, Lee PS. Our challenge for the remote guidance of animal's moving path. International Conference on Advances in Robotics Research (ICARR13), Aug 2013.
52. Lee KH, Kim KT, Lee PS. A 3D hydroelastic analysis of floating liquid storage structures in water waves. The Seventh MIT Conference on Computational Fluid and Solid Mechanics, Jun 2013.
53. Lee Y, Lee PS. New 3-node isotropic shell finite elements based on the MITC method. Seventh MIT Conference on Computational Fluid and Solid Mechanics, Jun 2013.
54. Kim CH, Kim DG, Lee PS. On the general framework to remotely guide animal's moving path. The 8th Asian Biophysics Association (ABA) Symposium, May 2013.
55. Kim JY, Kim YY, Lee PS. Research trends of structural damage assessment against Tsunami, KAOSTS conference, May 2013.
56. Kim MG, Kim SG, Woo IG, Han JH, Lee PS, Lee JI. Preliminary studies of ocean smart construction and safety enhancement. International Congress on Advances in Nuclear Power Plants (ICAPP), Apr 2013.
57. Lee KH, Lee JI, Woo IG, Han JH, Lee PS. Concept design of SMART mounted on GBS. International Congress on Advances in Nuclear Power Plants (ICAPP), Apr 2013.
58. Kim JY, Yoon JS, Kim YY, Lee PS. Case study on damage of coastal structures from Tsunami. KOSHAM conference, Feb 2013.
59. Lee PS, Lee KH, Lee K, Lee CH, Kim DG. Two challenges in ocean systems engineering. Invited in International forum on Electric Vehicle (IFEV), Oct 2012.
60. Yoon JS, Lee PS. Efficiency analysis of floating-type wave power generators. International Conference on Advances in Coupled Systems Mechanics (ACSM), 2012.
61. Lee K, Lee KH, Lee PS. A concept for offshore nuclear power plants (ONPP), US-Korea Conference, 2012.
62. Lee PS, Kim KT. On the hydroelastic analysis of floating structures. The First Joint SJTU-KAIST Research Symposium, Jun 2012.
63. Kim JG, Lee PS, Park KC. Mode selection criterion based on flexibility approach in component mode synthesis. The 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Material Conference, 2012.
64. Lee KH, Kim KT, Lee PS. Hydroelastic analysis of floating liquid storage structures. COSEIK symposium-spring, 2012.
65. Cho SP, Jiwinangun GR, Yoon JS, Lee PS. Study on hydroelastic behavior of floating structures with hinge connections. COSEIK symposium-spring, 2012.
66. Ko YB, Lee PS. Time integration analysis of rotating elastic bar problem. COSEIK symposium-spring, 2012.
67. Lee PS, Kim KT, Jiwinangun GR, Cho SP, Park KC. On the general hydroelastic analysis of floating structures in frequency domain. Ship hydrodynamics research association conference, 2012.
68. Lee KH, Lee KH, Lee PS. A new concept of ocean nuclear power plant (ONPP). Korean Nuclear Society Autumn Meeting, 2011.

69. Choi KJ, Kim YY, Lee PS. Development of automatic ship-to-ship mooring system and its applications in ocean engineering. UT-KAIST Symposium, Aug 2011.
70. Kim CH, Kim DG, Lee S, Kim HG, Lee PS, Myung H. Development of a remote control system for a turtle. Gordon Research Conference, 2011.
71. Kim JG, Zi G, Lee PS. Development of design charts for very large floating structures. The 21st International Offshore and Polar Engineering Conference, 2011.
72. Kim KT, Kim JG, Lee PS, Park KC. Hydroelastic analysis of floating structures. The Sixth MIT Conference on Computational Fluid and Solid Mechanics, 2011.
73. Yoon K, Lee PS. Development of general beam finite elements with warping displacements. The Sixth MIT Conference on Computational Fluid and Solid Mechanics, 2011.
74. Kim JG, Kim KT, Lee PS. Study on hydroelastic analysis of floating plate structures. COSEIK Symposium-spring, 2011.
75. Yoon K, Lee PS. Developing general beam finite element with warping displacement. COSEIK Symposium-spring, 2011.
76. Kim KT, Lee PS, Park KC. Accuracy analysis of a hydroelastic model of a floating beam. COSEIK Symposium-spring, 2011.
77. Lee Y, Choi CK, Lee PS. Development of an efficient 3-node plate bending element by using the Hellinger-Reissner functional. COSEIK Symposium-spring, 2011.
78. Choi KJ, Kim YY, Kim SI, Lee GG, Chung H, Lee PS. Novel automatic ship-to-ship mooring system for container operations in open sea. SNAK conference-fall, 2010.
79. Hong DC, Choi KJ, Lee PS. Time-mean drift forces and moments on a container ship and a mobile harbor floating side by side in waves. SNAK conference-fall, 2010.
80. Lee Y, Ma JS, Kim YY, Chung H, Lee PS. On the Motion of the Semi-submersible Mobile Harbor System. Advances in Interaction and Multiscale Mechanics, 2010.
81. Lee JH, Yoon SJ, Chung H, Lee PS. The conceptual design of semi-submersible type mobile harbor using axiomatic design principles. Korea Society of CAD/CAM Engineers Conference, 2010. (awarded)
82. Zi G, Lee SO, Kim JG, Lee PS, Lee SJ. Hydroelastic analysis of very large floating structure. KSCE Conference, 2008.
83. Noh HC, Lee PS, IH Kim. Random Variable State: Response Variability and Exact Expression for Gaussian Random Variable. KSCE Conference, 2007.
84. Lee PS, Lee JY, Lee YH. Static and dynamic elastoplastic large deformation analysis of 3D steel frame structures. KSSC Conference, 2006.
85. Lee PS, Zhang XH, McClure G. Development of a general three-dimensional L-section beam finite element for elastoplastic large deformation analysis and its application to the analysis of a transmission tower. Third MIT Conference on Computational Fluid and Solid Mechanics, 2005.
86. Park TH, Lee PS. Large deformation analysis of saturated porous media using Biot's model. Joint ASME/ASCE/SES Conference on Mechanics and Materials, 2005.
87. Lee PS, McClure G. A general 3D L-section beam finite element for elastoplastic large deformation analysis. The 20th Canadian Congress of Applied Mechanics, 2005.
88. Jeong YJ, Jung KH, Lee PS, Park SS, Hwang IS. Parameter study of sandwich steel-concrete composite structures. COSEIK Symposium-fall, 2000.
89. Choi CK, Lee PS, Park YM. A 4-node non-conforming flat shell element with drilling DOF. ASCE Engineering Mechanics Conference, Baltimore, 1999.

90. Choi CK, Lee PS. A 4-node non-conforming flat shell element with drilling DOF. COSEIK (Computational Structural Engineering Institute of Korea) Symposium-fall, 27-34, Oct 1998.

Invited Lectures

1. Lee PS. Technology developments for future railways. The First Wednesday Multidisciplinary Forum, Apr 2015.
2. Lee PS. Development state of PADO, free-software for hydroelastic analysis. Korea Research Institute of Ships and Ocean Engineering (KRISO), Jan 2015.
3. Lee PS, Kim JM. Gravity based structures in ocean engineering. Samsung C&T, Aug 2014.
4. Lee PS. Development of PADO for hydroelastic analysis. Samsung Heavy Industries, Jul 2014.
5. Lee PS, Kim SH. Technology of blast resistant ocean structures. Research Institute of Industrial Science and Technology (RIST), Feb 2014.
6. Lee PS. Fluid-structure interaction problems in ocean engineering. Korea Institute of Ocean Science & Technology (KIOST), Nov 2013.
7. Lee PS. Research in very large floating structures and their hydroelastic analysis. Seminars on floating runway structures, Nov 2013.
8. Lee PS. Analysis of shell structures using ADINA. ADINA seminar, Nov 2013.
9. Lee PS. Civil engineering, challenge towards ocean. University of Seoul, 2012.
10. Lee PS. Mobile ocean nuclear power system. Sejong University, 2011.
11. Lee PS. Development of Mobile Harbor technology. Research Institute of Industrial Science and Technology (RIST), 2009.
12. Lee PS. On the nonlinear FE analysis of steel frame structures. Research Institute of Industrial Science and Technology (RIST), 2007.
13. Lee PS. Inelastic large deformation analysis of steel towers. Korea Institute of Construction Technology, 2005.

PATENTS

Applied Patents

1. Modularized floating type nuclear plant system. 2015. Korean Patent.
2. Nuclear fuel loading system and method in floating type nuclear plant. 2015. Korean Patent.
3. Shock absorption member using metallic foam tile. 2015. Korean Patent.
4. Sandwich panel and method of manufacturing the same. 2015. Korean Patent.
5. Emergency passive cooling system for offshore nuclear power plant. 2013. Korean Patent.
6. Marine nuclear plant and installation method of it. 2012. Korean Patent.
7. Marine nuclear power plant and installation method of it. 2012. Korean Patent.
8. GBS for a marine nuclear power plant and its installing method. 2012. Korean Patent.
9. Marine nuclear plant using GBS hull and its installing method. 2012. Korean Patent.

Registered Patents

1. Apparatus for stopping fluid spillage in vessel accident and method using the same. 2015. Korean Patent 10-1520815.

2. Mooring system for a vessel. 2014. European Patent 02450271.
3. Safety system of ocean system-integrated modular advanced reactor. 2014. Korean Patent 10-1433907.
4. Cooling system for nuclear power plant by using sea water. 2014. Korean Patent 10-1433907.
5. Mooring system for a vessel and floating body and quay wall including the same. 2014. Chinese Patent 102464213.
6. Ship for installing sea wind power generator and method using the same. 2014. Korean Patent 10-1375143.
7. Method for constructing ship on the sea and connecting block used therein. 2014. Korean Patent 10-1369799.
8. Module-structured marine nuclear power plant. 2014. Korean Patent 10-1353556.
9. Apparatus and method for induction of animal moving. 2013. Korean Patent 10-1339689.
10. Mooring system for a vessel. 2013. U.S. Patent 08499709.
11. Independently controlled multi-stage hydraulic cylinder and mooring system using the cylinder. 2012. Korean Patent 10-1206409.
12. Mooring system for a vessel and floating structure, mobile harbor and quay using it. 2012. Korean Patent 10-1198829.
13. Docking apparatus with a variable fender. 2012. Korean Patent 10-1184917.
14. Method and apparatus for control of a living thing. 2012. Korean Patent 10-1141592.
15. Method and apparatus for movement control of a living thing. 2012. Korean Patent 10-1132619.
16. Loading and unloading equipment of a mobile harbor and method thereof. 2012. Korean Patent 10-1125045.
17. Semi-submersible mobile harbor and method for transporting containers using the same. 2012. Korean Patent 10-1131573.
18. Mobile portal crane and vessel with the crane. 2012. Korean Patent 10-1112158.
19. Apparatus for controlling rolling for floating body. 2012. Korean Patent 10-1138752.
20. Pure oxygen combustion system using heat exchange. 2011. Korean Patent 10-1103256.
21. Self-energy generating electrolytic protection system. 2011. Korean Patent 10-1040204.
22. Apparatus for connecting concrete blocks of a floating structure in sea. 2011. Korean Patent 10-1066396.
23. Continuous launching method of floating structure from land to sea. 2011. Korean Patent 10-1071646.
24. Concrete inner mold using an air pressure. 2011. Korean Patent 10-1029462.
25. Apparatus and the method for continuously connecting precast concrete blocks on the sea. 2011. Korean Patent 10-1009908.
26. Lock-up apparatus of ship with buoyant berth. 2011. Korean Patent 10-1054712.
27. A bridge structure of floating type. 2010. Korean Patent 10-0993631.
28. Apparatus for connecting floating structures in sea. 2010. Korean Patent 10-0985138.
29. Mooring method enhancing the side retaining force of a floating structure. 2010. Korean Patent 10-0979256.
30. Construction method for floating structures in the sea. 2010. Korean Patent 10-0973255.

31. A floating type structure and its constructing method responding to flood water level. 2010. Korean Patent 10-0972387.
32. Buoyancy maintaining method of floating concrete structure, 2010. Korean Patent 10-0939821.
33. Falling down method of floating concrete block manufactured on the sea. 2009. Korean Patent 10-0903987
34. Manufacturing method of floating concrete block on the sea. 2009. Korean Patent 10-0903986
35. Containing system using floating structure. 2009. Korean Patent 10-0921438
36. Module type tuned mass damper. 2008. Korean Patent 10-0829489

ACTIVITIES

Journal Editing

1. Associate Editor, Structural Engineering and Mechanics, 2011-.
2. Editor, Ocean Systems Engineering, 2011-.
3. Editorial Board Member, Computers & Structures, 2011-.
4. Editorial Board Member, Journal of Computational Structural Engineering Institute of Korea, 2010-2011.
5. Editorial Board Member, International Journal of Concrete Structures and Materials, 2009-2010.
6. Editorial Board Member, International Journal of Steel Structures, 2007-2009.
7. Editorial Board Member, KSCE journal of Civil Engineering, 2006-2009.

Organizing Conferences & Symposiums

1. Secretary General, The 2016 World Congress on Advances in Civil, Environmental, and Material Research. Aug 2016.
2. Organizer, The Second SJTU-U.Tokyo-KAIST symposium. Oct 2015.
3. Co-chair, 2015 World Congress on Advances in Aeronautics, Nano, Bio, Robotics and Energy (ANBRE15). Aug 2015.
4. Co-chair, 2015 International Conference on Innovative in Structural Engineering and Mechanics (ISEM2015). Aug 2015.
5. Secretary General, 2015 World Congress on Advances in Structural Engineering and Mechanics (ASEM15). Aug 2015.
6. Member of International Scientific Committee, ECCOMAS MSF 2015: The 2nd International Conference on Multi-scale Computational Methods for Solids and Fluids. Jun 2015.
7. Organizer, The First SJTU-U.Tokyo-KAIST symposium. Sep 2014.
8. Editorial board member, The 12th International Conference on Computational Structures Technology (CST2014). Sep 2014.
9. Co-chair, 2014 Int'l Conference on Advances in Coupled Systems Mechanics (ACSM14). Aug 2014.
10. Secretary General, 2014 World Congress on Advances in Civil, Environmental, and Materials Research (ACEM14). Aug 2014.
11. Co-chair, 2013 International Conference on Innovative in Structural Engineering and Mechanics (ISEM13). Sep 2013.

12. Secretary General, 2013 World Congress on Advances in Structural Engineering and Mechanics (ASEM13). Sep 2013.
13. Secretary General, 2013 World Congress on Advances in Nano, Biomechanics, Robotics and Energy Research (ANBRE13). Aug 2013.
14. Organizer, The second SJTU-KAIST symposium. Aug 2013.
15. Co-chair, 2012 International Conference on Advances in Coupled Systems Mechanics (ACSM12).
16. Secretary General, 2012 World Congress on Advances in Civil, Environmental, & Materials Research (ACEM12).
17. Organizer, The First SJTU-KAIST symposium. Jun 2012.
18. Co-chair, 2011 Conference of Steel & Composite Structures (ICSCS 2011).
19. Co-organizer, 2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM11+).
20. Organizer of the mini-symposium "Fluid-structure interaction in ocean engineering", 2010 International Conference on Advances in Interaction and Multiscale Mechanics (AIMM10).
21. Co-organizer, 2010 International Conference on Advances in Interaction and Multiscale Mechanics (AIMM10).

Professional Associations

1. Member, Korean Society of Mechanical Engineers (KSME), 2015-.
2. Member, Korean Society of Hazard Mitigation (KOSHAM), 2013-.
3. Member, Korean Society of Noise and Vibration Engineering (KSNVE), 2013-.
4. Member, Society of Naval Architects of Korea (SNAK), 2013-.
5. Member, Korean Nuclear Society (KNS), 2013-.
6. Secretary, KNS-SNAK joint Committee for Ocean Nuclear Energy, 2014.
7. Member, VLFS (Very Large Floating Structures) Committee, Society of Naval Architects of Korea (SNAK), 2013.
8. Secretary, Ocean Nuclear Power Plant Committee, Korean Nuclear Society (KNS), 2012-2013
9. Member, Korean-American Scientists and Engineers Association (KSEA), 2012-
10. Member, American Institute of Aeronautics and Astronautics (AIAA), 2012-2013.
11. Member, Korea Concrete Institute (KCI), 2009-.
12. Member, Korean Society of Civil Engineers (KSCE), 1998-.
13. Member, Computational Structural Engineering Institute of Korea (COSEIK), 1997-.
14. Member, Korean Society of Steel Construction (KSSC), 1996-.
15. Member, Korea Construction Engineers Association, 1996-.
16. Member of technical committee, Korea Construction New-Technology Association, 2006 -2009.

TEACHING

- ME535, Finite Element Analysis of Structures (Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015)

- ME532, Advanced Analysis of Solids and Structures (Spring 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2014)
- ME523, Introduction to Fluid –Structure Interaction (Fall 2011, Spring 2013, Spring 2015)
- ME670, Construction of Offshore Structures (Summer 2011)
- ME597, Introduction to Renewable Ocean Energy (Spring 2012)
- ME509, Engineering Mechanics for Ocean Systems (Spring 2010, Spring 2011)
- ME598, Human and Energy: A Challenging Pursuit from Ocean (Fall 2012, Spring 2013, Fall 2013, Spring 2014)
- ME403, Introduction to Naval Architecture and Ocean Engineering (Summer 2013)
- MAE231, Solid Mechanics (2016)

RESEARCH PROJECTS

- Laboratory of near field under water explosion (PI, 2015, 2016-)
- Development of technologies and equipments for HNS(Hazardous-and Noxious Substance) outflow disaster response (2015-)
- Core technology development of SMART mounted 100MWe floating-type NPP (PI, 2014, 2015-)
- Development of a three dimensional hydroelastic analysis tool for sloshing and floating wind turbines (PI, 2014, 2015-)
- Development of a floating type ocean wind power system with economic competitive edge (2014, 2015, 2016-)
- Developments for new concept design of offshore floating wind turbine and coupled dynamic analysis code (PI, 2014, 2015)
- Hydroelastic analysis of submerged tunnels under earthquake, wave and current (PI, 2013, 2014)
- Development of FEM modeling core (PI, 2013)
- Development of analysis technology for structural damage assessment against Tsunami (PI, 2012, 2013, 2014)
- Development of FE model for accurate assembly in offshore floating dock (PI, 2012)
- Development of design technology of blast harden bulk heads (2012, 2013, 2014)
- Development of a three dimensional hydroelastic analysis tool for floating structures (PI, 2011, 2012, 2013)
- Advanced education track for infrasystems of ocean renewable energy (PI, 2011. 2012, 2013, 2014, 2015-)
- Remote control system for animals using behavior biology (PI, 2011)
- Development of automatic ship-to-ship docking system (PI, 2010)
- Development of shell finite element for large displacement analysis (PI, 2010)
- Development of pressure vessels for CO2 carriers (PI, 2010)
- Remote guidance system for fish (PI, 2010)
- Development of computational procedures for nonlinear analysis of offshore structures and hydro-elastic analysis of floating structures (PI, 2009)

GRADUATE SUPERVISION

- Cheol-Hu Kim. Ph.D 2016, Researcher at National Research Council of Science & Technology
- Kang-Hun Lee. Ph.D 2016, Researcher at Korea Atomic Energy Research Institute
- Hyun-Duk Seo. MS 2016, Doctoral student at KAIST
- Dong-Hwa Lee. MS 2016, Doctoral student at KAIST
- Jae-Min Kim. MS 2016, Samsung C&T Engineering & Construction
- Hyeong-Min Jeon. Ph.D 2015, Post-doctoral researcher at MIT (Massachusetts Institute of Technology)
- Kyungho Yoon. MS 2011, Ph.D 2015. Post-doctoral researcher at Seoul National University
- Youngyu Lee. MS 2011, Ph.D 2015, Researcher at Agency for Defense Development
- Sung-Ho Kim. MS 2015, Korean Navy
- Hyo-Jin Kim. MS 2015, Doctoral student at KAIST
- San Kim. MS 2015, Doctoral student at KAIST
- Jin-Gyun Kim. Ph.D 2014, Researcher at Korea Institute of Machinery and Materials
- Zhang Bilin. MS 2014, Researcher at Hyundai Heavy Industries
- Jeong-Ho Kim. MS 2014, Doctoral student at KAIST
- Byung-Do Lee. MS 2014, STX Offshore & Shipbuilding
- Yeong-Bin Ko. MS 2013, Doctoral student at KAIST
- Seong-Pil Cho. MS 2013, Doctoral student at NTNU (Norwegian University of Science and Technology)
- Ki-Hwan Lee. MS 2012, Researcher at Hyundai Heavy Industries
- Randi Gusto Jiwinangun. MS 2010
- Ki-Tae Kim. MS 2011, Doctoral student at MIT (Massachusetts Institute of Technology)
- Jae-Seok Ma. MS 2011, Researcher at Samsung Heavy Industries