

1. *Structural damage detection of cable-supported bridges by vibration measurements (1/12/1999-21/6/2002, Co-investigator of RGC-GRF project No. PolyU 5052/99E, B-Q302, HK\$ 430,000);*
2. *Dynamic analysis and semi-active control of bridge stay cables excited by support motions (15/12/2000-14/12/2003, Co-investigator of RGC-GRF project No. PolyU 5045/00E, B-Q382, HK\$707,482);*
3. *Development of structural health monitoring and management system based on geographic information system technology (2000-2003, Co-investigator of cross-departmental project funded by HKPolyU);*
4. *Research and implementation of smart magneto-rheological (MR) dampers for cable vibration control in the Dongting Lake Bridge (2000-2003, in collaboration with Central South University and University of Notre Dame);*
5. *Innovative optical fibre sensors for structural health monitoring of Tsing Ma Bridge (2/4/2002-31/12/2004, Co-investigator of cross-faculty project No. G-YD20, HK\$360,000);*
6. *Comparative study of cable vibration control using semi-active MR dampers and using passive dampers: field experimental verification (1/1/2002-30/9/2003, Principal investigator of HKPolyU project No. G-T483, HK\$50,000);*
7. *System identification, health monitoring, and damage detection (2002-2005, Co-investigator of Area of Strategic Development project funded by HKPolyU, Project No. A230, HK\$679,240);*
8. *Structural control and intelligent structures (2002-2005, Co-investigator of Area of Strategic Development project funded by HKPolyU, Project No. A234, HK\$996,080);*
9. *Technology and implementation issues for semi-active vibration control of long-span bridge cables (1/11/2002-31/12/2006, Principal investigator of RGC-GRF project No. PolyU 5051/02E, B-Q581, HK\$736,666);*
10. *Stochastic optimal control of cable-stayed bridges by using smart magneto-rheological (MR) dampers (15/9/2003-14/9/2006, Principal investigator of HKPolyU project No. G-T770, HK\$166,000);*
11. *Development of an innovative building-integrated photovoltaic cladding technology (2004-2005, Co-investigator of cross-departmental project No. G-879R, HK\$500,000);*
12. *Development of smart dampers with embedded sensors for cable vibration control (21/7/2004-20/7/2006, Representative co-principal investigator of Interdisciplinary/Collaborative Research Scheme project No. G-YD85, HK\$300,000);*
13. *Structural damage detection of bridges under varying environmental conditions (1/6/2005-31/5/2007, Principal investigator of HKPolyU project No. A-PG42, HK\$140,000);*

14. *Hamiltonian theory for dynamics and control of nonlinear stochastic systems (2004-2007, Co-investigator of a key program project of National Natural Science Foundation of China, Project No. 10332030, RMB1,600,000);*
15. *Knowledge discovery and data mining system for structural health monitoring of instrumented bridges in Hong Kong (1/12/2004-30/11/2007, Principal investigator of RGC-GRF project No. PolyU 5142/04E, B-Q807, HK\$506,447);*
16. *Evaluation of bridge component failure probability using structural health monitoring data (19/12/2005-18/6/2008, Principal investigator of RGC-GRF project No. PolyU 5241/05E, B-Q931, HK\$393,637);*
17. *Semi-active MR damper-based control system for long-span spatial structures (1/6/2007-31/5/2009, Principal investigator of HKPolyU-funded Postdoctoral Research Project No. G-YX87; Postdoctoral Fellow: Dr. K.H. Lam, HK\$696,000);*
18. *Bridge health monitoring and smart vibration control (2005-2009, Principal investigator of HKPolyU project No. 87KP);*
19. *Monitoring-based assessment of bridges subject to ship collision (1/1/2007-30/6/2009, Principal investigator of RGC-GRF project No. PolyU 5253/06E, B-Q01X, HK\$403,500);*
20. *Modelling and control design of smart magneto-rheological (MR) dampers with embedded sensors for cable vibration control (1/12/2007-31/5/2010, Principal investigator of RGC-GRF project No. PolyU 5252/07E, B-Q06Q, HK\$698,321);*
21. *Vibration control and health monitoring of slender structures (1/3/2009-16/4/2010, Principal investigator of international collaborative research project No. H-ZG27, HK\$122,514);*
22. *Smart structures and systems based on electro- and magneto-active materials (1/9/2006-31/8/2010, Co-investigator of Development of Niche Areas Programme funded by HKPolyU, Project No. 1-BB95, HK\$4,739,865);*
23. *Study of dynamic response and damage characteristics of bridges subjected to ship collision through numerical analysis (1/4/2008-28/2/2011, Co-investigator of HKPolyU project No. A-PC0F, HK\$150,000);*
24. *Optimal sensor placement for structural health monitoring (1/9/2008-28/2/2011, Co-principal investigator of HKPolyU Inter-Faculty Research project No. G-YG78, HK\$299,300);*
25. *Development and research of a structural health monitoring benchmark problem for high-rise structures (1/12/2008-31/5/2011, Principal investigator of RGC-GRF project No. PolyU 5263/08E, B-Q12P, HK\$580,935);*
26. *A study on mobile elevator-assisted sensor data collection for structure health monitoring (1/9/2009-29/2/2012, Co-principal investigator of HKPolyU Inter-Faculty Research project No. 1-ZV5W, HK\$150,000);*
27. *Smart wireless sensor networks for living environment monitoring in metropolis areas (2009-2011, Principal investigator of Shenzhen/Hong*

Kong Innovation Circle research project No. 08FZ-01);

28. *Development of self-sustainable wireless units with built-in algorithms for decentralized fatigue damage assessment of steel structures (1/8/2009-31/7/2011, Principal investigator of HKPolyU project No. G-YH47, HK\$150,000);*
29. *Real-time monitoring and condition assessment of super-tall buildings during construction (2009-2011, Principal investigator of a sub-project of the National High-tech Research and Development Program (863 Program) “Technologies for condition monitoring and reliability control of super-tall buildings during construction”, Project No. 2009AA04Z420, RMB500,000);*
30. *Performance-based health monitoring of large civil engineering structures (1/8/2007-31/7/2012, Co-investigator of Development of Niche Areas project funded by HKPolyU, Project No. 1-BB68, HK\$8,500,000);*
31. *Performance-based design of structural health monitoring system (15/2/2008-31/7/2012, Principal investigator of a sub-project of Development of Niche Areas Programme funded by HKPolyU, Project No. 1-BB6D, HK\$759,138);*
32. *Advanced sensor network and data acquisition, transmission and management systems (15/2/2008-31/7/2012, Principal investigator of a sub-project of Development of Niche Areas Programme funded by HKPolyU, Project No. 1-BB6E, HK\$400,000);*
33. *Development of structural health monitoring system for wind turbines (2010-2012, Principal investigator of HKPolyU ITRS/IGARD project No. G-RE13).*
34. *Development of a portable monitoring system comprising self-sustainable dynamic strain sensors and wireless units with built-in algorithms for fatigue life assessment of existing steel structures (1/12/2010-30/11/2012, Principal investigator of HKPolyU project No. G-U845, HK\$168,000);*
35. *Verification of wind pressure and wind induced response of a supertall structure using a long-term structural health monitoring system (1/12/2009-31/5/2013, Principal investigator of RGC-GRF project No. PolyU 5280/09E, B-Q18L, HK\$1,003,358);*
36. *Instrumentation for settlement and displacement monitoring of foundation of Beijing-Shanghai High Speed Rail (BSHSR) (21/2/2011-20/8/2013, Principal investigator of HKPolyU interdisciplinary research project No. 4-BC02, HK\$412,900);*
37. *Instrumentation for operation safety and aerodynamic monitoring of vehicle structure of a train running on BSHSR (21/2/2011-20/8/2013, Representative co-principal investigator of HKPolyU interdisciplinary research project No. 4-BC03, HK\$497,000);*
38. *Instrumentation for experimental investigation of dynamic and fatigue behaviors of a bogie for CRH380B high speed trains (21/2/2011-20/8/2013, Representative co-principal investigator of HKPolyU interdisciplinary research project No. 4-BC04, HK\$333,113);*
39. *Instrumentation for experimental investigation of fatigue life of welded connections in vehicle structure of heavy goods trains (21/2/2011-*

- 20/8/2013, Principal investigator of HKPolyU interdisciplinary research project No. 4-BC05, HK\$308,000);
40. Development of condition-monitoring systems for railway systems in China using fibre-optic sensor networks (5/5/2011-4/5/2013, Co-principal investigator of HKPolyU interdisciplinary research project No. 4-BC06, HK\$3,059,890);
 41. Advanced simulation of the Stonecutters Bridge under traffic, wind, earthquake and ship collision (1/8/2009-31/7/2013, Co-investigator of HKPolyU project No. 1-BB20, HK\$780,000);
 42. Wireless monitoring and damage detection of wind turbine structures (2012-2014, Principal investigator of Technology and Research Development Fund of Shenzhen, Project No. JC201105201141A, funded by Shenzhen Science and Technology Innovation Commission, RMB80,000);
 43. Vibration-based load identification using structural health monitoring data (1/1/2012-31/12/2013, Principal investigator of Germany/Hong Kong Joint Research Scheme project No. 3-ZG86, HK\$40,118);
 44. Study of semi-active control of high-speed trains using magnetorheological dampers (1/9/2012-31/8/2014, Principal investigator of Innovation and Technology Support Programme Project No. ITS/241/11, K-ZP3D, funded by the Innovation and Technology Commission of HKSAR Government, HK\$865,100);
 45. Modelling of dynamic hysteretic behaviour of magneto-rheological elastomers in tension-compression deformation (16/4/2012-15/4/2014, Principal investigator of HKPolyU project No. G-YJ94, HK\$105,000);
 46. Improving construction precision and safety of skyscrapers through real-time monitoring and stage analysis (1/7/2012-30/6/2014, Co-investigator of CII-HK research project No. 5-ZJD3, HK\$300,000);
 47. Matching Grant for “Study of semi-active control of high-speed trains using magnetorheological dampers” (2012-2014, Principal investigator of Matching Grant Project No. 87UK, funded by RISUD, The Hong Kong Polytechnic University, HK\$170,000);
 48. Large External Research Grant Support (LERGS) Fund for “Hong Kong Branch of the National Rail Transit Electrification and Automation Engineering Technology Research Centre: Establishment Proposal” (1/4/2014-30/6/2015, Principal investigator of LERGS Project No. 1-ZE9B, The Hong Kong Polytechnic University, HK\$150,000);
 49. Detection and monitoring of fatigue cracks in axles of high-speed train bogies based on nonlinear acousto-ultrasonic waves and de-centralized sensing (1/7/2012-30/6/2015, Co-investigator of HKPolyU project No. G-YK83, HK\$322,802);
 50. Enhanced fatigue evaluation of complex steel structures using innovative sensing technology (1/4/2013-31/3/2015, Principal investigator of HKPolyU project No. G-YM25, HK\$311,389);

51. *Numerical analysis and field monitoring of temperature actions on supertall structures during the construction stage (1/12013-30/6/2016, Co-investigator of RGC-GRF project No. PolyU 5285/12E, B-Q32K, HK\$725,000);*
52. *The key theories and methods of high speed railway track structure detection (1/1/2013-31/12/2016, Principal investigator of Joint MOR-NSFC Key Research Program project No. U1234201, M-C001, RMB800,000);*
53. *Design theory and method of high-speed railway tunnel based on limit state method (1/1/2013-31/12/2016, Principal investigator of Joint MOR-NSFC Key Research Program project No. U1234210, M-C002, RMB500,000);*
54. *Long-term dynamic stability of ballastless track subgrade for high-speed railway and design method based on limit states (1/1/2013-31/12/2016, Co-investigator of Joint MOR-NSFC Key Research Program project No. U1234204, M-C003, RMB700,000);*
55. *Compare seismic resistant performance with wind resistant performance of buildings and structures in Hong Kong (1/10/2013-31/12/2016, Principal investigator of HKPolyU project No. 4-ZZCE, HK\$200,000);*
56. *Codify the seismic-resistant design of buildings and structures in Hong Kong taking into account the relevant international standards and Hong Kong's special features (1/10/2013-30/9/2016, Co-investigator of HKPolyU project No. 4-ZZCK, HK\$200,000);*
57. *Matching Grant for "Design theory and method of high-speed railway tunnel based on limit state method" (2013-2016, Principal investigator of Matching Grant Project No. 87UX, funded by RISUD, The Hong Kong Polytechnic University, HK\$170,000);*
58. *Matching Grant for "The key theories and methods of high speed railway track structure detection" (2013-2016, Principal investigator of Matching Grant Project No. 87UZ, funded by RISUD, The Hong Kong Polytechnic University, HK\$170,000);*
59. *A novel system for monitoring micro-cracks in rail tracks (1/7/2014-30/6/2016, Principal investigator of Blue-Sky Research Scheme Project No. 1-ZVCW, funded by RISUD, The Hong Kong Polytechnic University, HK\$200,000);*
60. *Integrity monitoring of continuously welded rail tracks by an integrated FBG and PZT sensing technology (1/1/2015-31/3/2017, Principal investigator of HKPolyU project No. G-YBC4, HK\$105,000);*
61. *Design theory and method of high-speed railway tunnel based on limit state method (5/12/2014-31/12/2016, Principal investigator of HKPolyU project No. 4-BCB2, HK\$125,950);*
62. *The key theories and methods of high speed railway track structure detection (5/12/2014-31/12/2016, Principal investigator of HKPolyU project No. 4-BCB3, HK\$201,520);*
63. *Analysis of 15-year structural health monitoring data of cable-supported bridges – leading to a benchmark study (1/1/2014-30/6/2017, Principal investigator of RGC-GRF project No. PolyU 5224/13E, B-Q37Q, HK\$670,500);*

64. *Design and implementation of tunable vibration absorbers with sensing-while-tuning and controllable damping for advanced mechatronic system applications (1/1/2014-30/6/2017, Co-investigator of RGC-GRF project No. PolyU 5228/13E, B-Q38M, HK\$671,860);*
65. *Development of rail crack monitoring system using fibre optic based ultrasonic guided wave detection technology (1/4/2015-28/2/2017, Principal investigator of Innovation and Technology Fund (ITF) Project No. ITS/343/14, funded by the Innovation and Technology Commission of HKSAR Government, K-ZPA7, HK\$1,217,300);*
66. *Matching Grant for “Development of rail crack monitoring system using fibre optic based ultrasonic guided wave detection technology” (1/4/2015-28/2/2017, Principal investigator of Matching Grant Project No. 1-ZEA8, funded by FCE, The Hong Kong Polytechnic University, HK\$119,000);*
67. *Structural health prognosis of bridges based on Bayesian inference (17/1/2017-16/1/2019, Principal investigator (PI) of The Hong Kong Scholars Program, Scholar: Dr. Hua-ping Wan, HK\$300,000);*
68. *Smart railway technology and applications (12/10/2015-11/10/2018, Representative co-principal investigator (Rep. Co-PI) of Matching Fund for Chinese National Engineering Research Center (CNERC), HK\$15,000,000 funded by The Hong Kong Polytechnic University, Project No. 1-BBY5);*
69. *Funding support to “Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center” (12/10/2015-11/10/2018, Principal investigator (PI) of Innovation and Technology Fund (ITF), HK\$15,000,000 funded by the Innovation and Technology Commission of HKSAR Government, Project No. K-BBY1);*
70. *Structural condition prognosis of bridges using long-term structural health monitoring data and Bayesian updating (1/1/2016-30/6/2019, Principal investigator (PI) of RGC-GRF project No. PolyU 152241/15E, B-Q49G, HK\$720,788, HK\$884,946);*
71. *SHM-oriented blind source separation using a Bayesian approach (1/1/2017-30/6/2020, Principal investigator (PI) of RGC-GRF project No. PolyU 152767/16E, B-Q55K, HK\$482,605, HK\$579,126) (PhD students: Mr. S.X. Chen; Mr. B.Y. Zhang);*
72. *Improving construction precision of supertall structures through integration of field monitoring and advanced analysis (1/1/2017-31/12/2019, Co-investigator (Co-I) of RGC-GRF project No. PolyU 152621/16E, B-Q54G, HK\$675,647);*
73. *FRP-reinforced seawater sea-sand concrete structures for sustainable marine infrastructure (1/1/2017-31/12/2019, Co-investigator (Co-I) of University Supporting Fund project No. 1-BBAG, HK\$2,500,000);*
74. *Matching fund for “Condition monitoring and intelligent data analysis techniques for operation and maintenance strategies of high-speed rail infrastructure system” (15/6/2018-14/12/2019, Principal investigator (PI) of Matching Grant Project No. 1-ZVNF, funded by FCE, The*

Hong Kong Polytechnic University, HK\$119,000);

75. *Condition monitoring and intelligent data analysis techniques for operation and maintenance strategies of high-speed rail infrastructure system (15/6/2018-14/12/2019, Principal investigator (PI) of Hong Kong, Macao and Taiwan Science and Technology Innovation Cooperation Key Project under National Key Research and Development Plan, HK\$1,227,699 funded by Ministry of Science and Technology of China, Project No. 2018YFE0190100, K-BBVZ);*
76. *High-performance materials and structural elements for sustainable floating structures (1/6/2018-31/5/2021, Co-principal investigator (Co-PI) of University Strategic Focus Area (SFA) project No. 1-BBWE, HK\$2,500,000);*
77. *Quantification of the uncertainty in forecasts using structural health monitoring data: A Bayesian approach (1/1/2018-31/5/2021, Principal investigator (PI) of RGC-GRF project No. PolyU, B-Q59C) (PhD students: Mr. X. Ye; Mr. B.Y. Zhang; Mr. S.X. Chen);*
78. *Study on temperature behavior of bridges in real-time through the integration of field monitoring with advanced computational techniques (1/1/2018-31/5/2021, Co-investigator (Co-I) of RGC-GRF project No. PolyU 152125/17E, B-Q60H, HK\$538,544);*
79. *Intelligent high-speed rail driven by big data and machine learning (2/10/2018-1/10/2021, Principal investigator (PI) of Matching Fund for Chinese National Engineering Research Center (CNERC), HK\$15,000,000 funded by The Hong Kong Polytechnic University, Project No. 1-BBV2);*
80. *Development and validation of a multiscale dynamic wheel-rail contact FE model for assessing and predicting rail damage (1/12/2019-30/11/2021, Principal investigator (PI) of PolyU Postdoctoral Fellowship Scheme 2019, Postdoctoral Fellow: Dr. X.Y. Deng, Project No. 1-YW5H, HK\$799,800);*
81. *Funding support to “Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center” (12/10/2018-11/10/2021, Principal investigator (PI) of Innovation and Technology Fund (ITF), HK\$30,000,000 funded by the Innovation and Technology Commission of HKSAR Government, Project No. K-BBY1);*
82. *Model-free, response-only structural damage detection by variational sparse Bayesian learning (1/1/2019-31/6/2022, Principal investigator (PI) of RGC-GRF project No. PolyU 152014/18E, B-Q67F, HK\$632,421, HK\$802,421) (PhD student: Mr. X. Ye);*
83. *Postdoctoral Matching Fund Scheme 2020/21 (1st Round) (5/10/2020-4/10/2022, Principal investigator (PI), Project No. 1-W14J, The Hong Kong Polytechnic University, Postdoctoral Fellow: Dr. Qiu-Hu Zhang, HK\$288,288);*
84. *Enhancing safety, punctuality and ride comfort of railway transportation: From local metro system to global high-speed rail network (1/6/2019-31/5/2023, Principal investigator (PI) of RGC Research Impact Fund (RIF) 2018/19, Project No. R5020-18, 3-RC26,*

HK\$5,892,320) (PhD student: Mr. X. Ye);

- 85. Postdoctoral Matching Fund Scheme 2020/21 (3rd Round) (13/7/2021-12/7/2023, Principal investigator (PI), Project No. 1-W16W, The Hong Kong Polytechnic University, Postdoctoral Fellow: Dr. Zheng-Wei Chen, HK\$287,954).*