

Annual General Meeting Report of Hong Kong Society of Theoretical and Applied Mechanics (April 14, 2018)

1 Main Activities (since April 2017)

1.1 HKSTAM Annual Conference 2017

The 21st Annual Conference of HKSTAM (2017) in conjunction with the 13th Jiangsu – Hong Kong Forum on Mechanics and Its Application was held on **April 8, 2017 at The Hong Kong Polytechnic University, HK SAR**. This conference was co-organized by the Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM), the Jiangsu Society of Theoretical and Applied Mechanics (JSTAM), and the Hong Kong Polytechnic University (PolyU). The one-day conference aims to provide a platform for all scientists, engineers, and mathematicians working on mechanics and related areas to share, communicate and exchange ideas, and to enhance co-operations within relevant parties.

This proceeding consists of 49 abstracts including 4 Distinguished Lectures by **Prof. Alfonso Hing Wan NGAN** from The University of Hong Kong, **Prof. Maosen CAO** from Hohai University, **Prof. Quan WANG** from City University of Hong Kong, and **Prof. Jinxing LIU** from Jiangsu University. The conference is structured into 8 parallel sessions with 45 presentations.

Distinguished Lectures



Prof. Alfonso Hing Wan NGAN

Chair Professor, The University of Hong Kong

“When mechanics meets with chemistry – novel redox actuators made from nickel hydroxide”



Prof. Maosen CAO

Professor, Hohai University

"Wavelets-Driven Multiscale Dynamics Concepts for Structural Damage Detection"



Prof. Quan WANG

Chair Professor, City University of Hong Kong

"Energy Harvesting from ocean waves by Piezoelectric Technologies"



Prof. Jinxing LIU

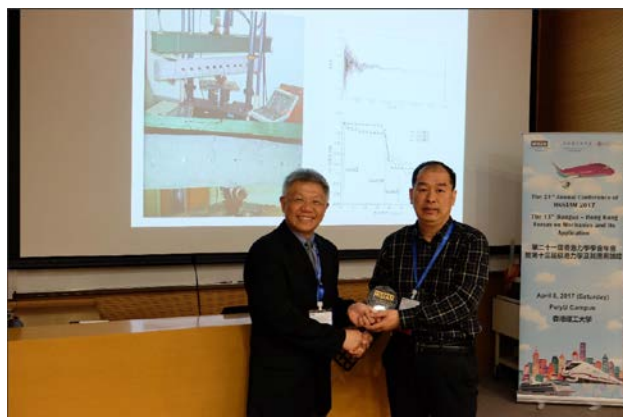
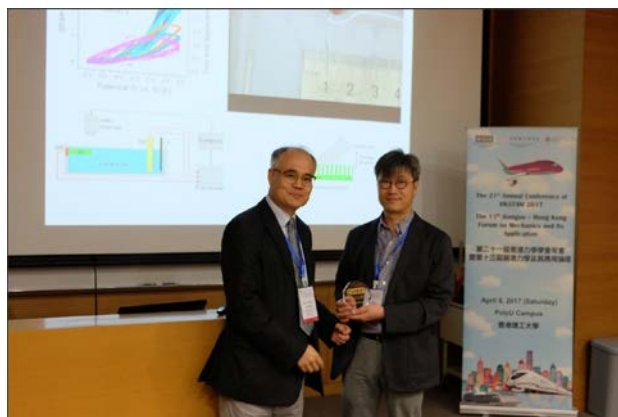
Professor, Jiangsu University

"Strain gradient elasto-plasticity meeting some newest challenges"

A total of **62 registered participants** in the conference including 14 EC members, 7 Jiangsu JSTAM participants, 4 invited speakers, 1 overseas participant and 36 other local participants. Based on a rigorous selection, eight **"Best Student Presentation Awards"** are given to honor best student presenters in the annual conference.



Conference group photo



HKSTAM representatives presenting souvenirs to four plenary speakers



Eight students receiving Best Student Presentation Awards

1.2 HKSTAM Annual Conference 2018

The 22nd Annual Conference of HKSTAM 2018 cum the 14th Shanghai – Hong Kong Forum on Mechanics and Its Application was held on April 14, 2018 (Sat) at The Hong Kong Polytechnic University, Hong Kong SAR, China. This conference was co-organized by the Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM), Shanghai Society of Theoretical and Applied Mechanics (SSTAM), and Hong Kong Polytechnic University (PolyU). The conference topics cover mechanics and its applications in all science and engineering disciplines.



Group photo of Shanghai delegate

43 abstracts, including 8 from Shanghai (including 2 plenary), and 35 from local universities (including 3 plenary) were arranged in 5 plenary sessions, and 8 parallel sessions in 4 seminar rooms.



Prof. Wei-Hsin LIAO

Associate Dean and Professor, The Chinese University of Hong Kong

“Smart Materials, Adaptive Structures and Intelligent Systems”



Prof. Jianbing CHEN

Professor, Tongji University

“Probability Density Evolution Analysis of Dynamic Response and Reliability of Complex Civil Engineering Structures under Disastrous Actions”



Prof. Qingping SUN

Associate Department Head and Professor, Hong Kong University of Science and Technology

“Novel Property of Materials through Nanoscale Phase Transition ----- Microstructure Design and Processing”



Prof. Yinfeng LI

Professor, Shanghai Jiao Tong University

“Mechanical Properties and Biomechanical Behaviors of Low Dimensional Materials”

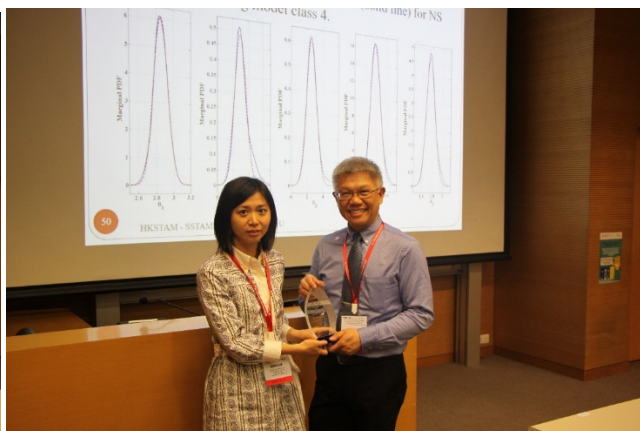


Prof. Paul Heung-Fai LAM

Professor, City University of Hong Kong

“Bayesian Model Updating and Structural Health Monitoring Utilizing Ambient Vibration Data”





HKSTAM representatives presenting souvenirs to five plenary speakers

Based on a rigorous selection, eight "Best Student Presentation Awards" were given to honor best student presenters in the annual conference.



Conference group photo



Group photo of best student presentation awardees

1.3 Participation to 13th Shanghai-HK Forum

On behalf of HKSTAM, HKSTAM President, Prof. Li Cheng, and EC member, Dr. Yang Lu, attended the 13th Shanghai-HK Forum on Mechanics and Its Application on 24th Sept 2017, and delivered speeches.



Conference group photo

1.4 Establishment of “Overseas Research Collaboration Coordination Platform”

In order to promote research collaboration between HKSTAM and Jiangsu STAM, an “Overseas Research Collaboration Coordination Planform”, initiated by Jiangsu STAM, has been established in Hong Kong. This platform will be dedicated to research collaboration coordination, human resources sharing and cutting-edge research promotion.



Ceremony for platform establishment



1.5 Participation to Chinese Congress of Theoretical and Applied Mechanics-2017

A delegate consisting of ~7 EC members attended the Chinese Congress of Theoretical and Applied Mechanics-2017 (CCTAM2017) which was held in Beijing, China from 13 to 16, August, 2017. EC Members delivered invited talks and regular talks at difference sessions.



1.6 Distinguished Lectures

In the past one year, HKSTAM organized four distinguished lectures.

1.6.1 by Prof. CK Law

A "HKSTAM Distinguished Lecture" was co-organized by HKSTAM and the Department of Mechanical Engineering at the Hong Kong Polytechnic University (PolyU), in PolyU on 11 April 2017. During the seminar, Prof. Chung K. Law, Robert H. Goddard Professor of Mechanical and Aerospace Engineering at Princeton University, the USA, delivered a talk titled "Fuel Options for Next Generation Chemical Propulsion".



Chung K. Law received his Ph.D. in Engineering Physics from the University of California at San Diego in 1973, and currently is the Robert H. Goddard Professor of Mechanical and Aerospace Engineering at Princeton University and the director of the Center for Combustion Research at Tsinghua University. His research interests cover various physical and chemical aspects of fundamental combustion phenomena, with applications to propulsion, energy, fuels and the environment. As of 2016 he has published over 475 journal articles, with over 10,000 SCI citations by others and an SCI h-index of 60. For his research accomplishments he has been honored with a number of professional awards, and an honorary Doctor of Engineering from the Hong Kong Polytechnic University in 2012. He is a fellow of the American Institute of Aeronautics and Astronautics (AIAA), the American Society of Mechanical Engineers (ASME), the American Physical Society (APS), the American Academy of Arts and Sciences (AAAS), and the American Association for the Advancement of Science (AAAS), a member of the US National Academy of Engineering (NAE), and a past president of the Combustion Institute. At the end of the seminar, Prof. Li Cheng, the President of HKSTAM, presented a souvenir on behalf the Society, to Prof. Law as a token of appreciation.



1.6.2 by Prof. K. Hannemann

A “HKSTAM Distinguished Lecture” was co-organized by HKSTAM and the Department of Mechanical Engineering at the Hong Kong Polytechnic University (PolyU), in PolyU on 3rd July 2017. At the seminar, Prof. K. Hannemann, from German Aerospace Center in Göttingen, Germany, delivered a talk titled “Hypersonic Research in the High Enthalpy Shock Tunnel Göttingen”.



Prof. K. Hannemann studied mechanical engineering at the University of Karlsruhe, Germany. He received his diploma in 1984. Subsequently he joined the German Aerospace Center in Göttingen and worked on incompressible wake flows. After receiving his doctoral degree in 1987 from the University of Karlsruhe, he began to work on space related research topics. These include experimental and numerical aerothermodynamics and space propulsion. From 1999 – 2002, he was Head of the High Enthalpy Shock Tunnel Göttingen, HEG group and in 2002 he became Head of the Spacecraft Department at DLR Göttingen. Since 2010 he lectures at the Justus Liebig Universität Gießen and in 2013 he was appointed Professor for Spacecraft at the JLU Gießen. Prof. K.

Hannemann is member of a number of international committees serves on the Editorial Board of the Shock Wave Journal and is Field Editor Aerothermodynamics for the CEAS Space Journal.

At the end of the seminar, Prof. Li Cheng, the President of HKSTAM, presented a souvenir on behalf the Society, to Prof. Hannemann as a token of appreciation.



1.6.3 by Prof. H.J. Gao

A "HKSTAM Distinguished Lecture" was co-organized by HKSTAM and the Department of Mechanical Engineering at the Hong Kong Polytechnic University (PolyU), in PolyU on 8th Aug 2017. At the seminar, Prof. Huajian Gao, from Brown University, the USA, Germany, delivered a talk titled "Topological Toughening of graphene and other 2D materials".

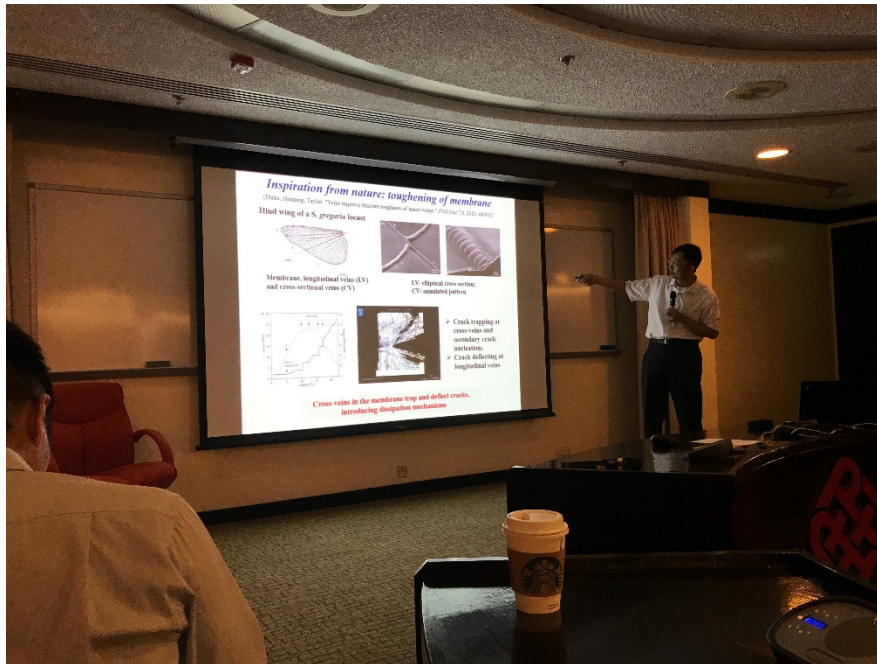
Huajian Gao received his B.S. degree from Xian Jiaotong University of China in 1982, and his M.S. and Ph.D. degrees in Engineering Science from Harvard University in 1984 and 1988, respectively. He served on the faculty of Stanford University between 1988 and 2002, where he was promoted to Associate Professor with tenure in 1994 and to Full Professor in 2000. He served as a Director at the Max Planck Institute for Metals Research between 2001 and 2006 before joining the Faculty of Brown University in 2006. At present, he is the Walter H. Annenberg Professor of Engineering at Brown.

Professor Gao's research is focused on the understanding of basic principles that control mechanical properties and behaviors of materials in both engineering and biological systems. He is a Member of the National Academy of Engineering (NAE), a Member of the Germany National Academy of Sciences Leopoldina, a Foreign Member of the Chinese Academy of Sciences (CAS) and the Editor-in-Chief of Journal of the Mechanics and Physics of Solids (JMPS), the flagship journal of his field. He is also the recipient of numerous academic honors, from a John Simon Guggenheim Fellowship in 1995 to recent honors including Rodney Hill Prize in Solid Mechanics from the International Union of Theoretical and Applied Mechanics in 2012, Prager Medal from Society of Engineering Science, Nadai Medal from American Society of Mechanical Engineers in 2015 and Theodor von Karman Medal from American Society of Civil Engineers in 2017.

Recently, the research group led by Prof. Gao has been exploring the potential use of topological effects to enhance the fracture toughness of graphene. For example, it has been shown that a sinusoidal graphene containing periodically distributed disclination quadrupoles can achieve a mode I fracture toughness nearly twice that of pristine graphene. In his talk, Prof. Gao reported the working progresses on further studies of topological toughening of graphene and other 2D materials. A phase field crystal method is adopted to generate the atomic coordinates of material with specific topological patterns. His group then performed molecular dynamics simulations of fracture in the designed samples, and observe a variety of toughening mechanisms, including crack tip blunting, crack trapping, ligament bridging, crack deflection and daughter crack initiation and coalescence.

At the end of the seminar, Prof. Li Cheng, the President of HKSTAM, presented a souvenir on behalf the Society, to Prof. Gao as a token of appreciation.





1.6.4 by Prof. J. Xu

A "HKSTAM Distinguished Lecture" was co-organized by HKSTAM and the Department of Mechanical Engineering at the Hong Kong Polytechnic University (PolyU), in PolyU on 12th Dec 2017. At the seminar, Prof. J. Xu, from School of Aerospace Engineering and Applied Mechanics, Tongji University, Shanghai, P.R. China, delivered a talk titled "共融機器人若干動力學關鍵問題".

徐鑒，男，1961 年 12 月生。國家傑出青年基金、上海市領軍人才和上海市優秀學科帶頭人，同濟大學特聘教授，博士生導師。現任國家自然科學基金委員會重大研究計劃“共融機器人基礎理論與關鍵技術”專家指導小組成員、中國力學學會常務理事、上海力學學會理事長、中國科協九大代表、中國機械工程學會機器人分會常務委員、《Theoretical and Applied Mechanics Letters》、《力學季刊》和《動力學與控制學報》副主編等。長期從事非線性動力學、時滯耦合系統的動力學與控制、軟體機器人的驅動與優化和振動控制與系統辨識等領域的研究工作。發表學術論文 200 余篇。

At the end of the seminar, Prof. Li Cheng, the President of HKSTAM, presented a souvenir on behalf the Society, to Prof. Gao as a token of appreciation.



1.7 Organization of Cross-Strait Symposium on Dynamical Systems and Vibration (SDSV 2017)

The SDSV 2017 was held on 10-17 December 2017 in Hong Kong (10-14 Dec) and Macau (14-17 Dec). The objective of the symposium was to promote extensive research collaboration between cross-strait researchers from Mainland, Taiwan and Hong Kong/Macau. It was organized by HKSTAM and Department of Electromechanical Engineering at University of Macau. It was attended by more than 60 researchers with a total of 37 oral presentations by participants from China mainland, Hong Kong and Macau. Four keynote speakers were invited: Zhilong Huang (Zhejiang University), Caishan Liu (Peking University), Jian Xu (Tongji University) and Q.S. Xu (University of Macau).

Based on the income collected from registration fees, the organizing committee offered the maximum level of service without making profit while maintain a break even finance balance sheet. Throughout and after the symposium, the organizing committee received positive feedback from the participants. It was a great experience to the organizing committee and student helpers.

In conclusion, SDSV 2017 was a successfully academic event. The experience and records can be referred and used for other similar activities and events in the future.



Symposium group photo



Main conference venue at Hong Kong Disneyland Hotel

2 Current Status of HKSTAM

HKSTAM has over 150 members including 40 life members. In this year, HKSTAM has 12 institutional members, including:

1. Department of Architecture and Civil Engineering, City University of Hong Kong
2. Department of Mathematics, City University of Hong Kong
3. Department of Mechanical and Biomedical Engineering, City University of Hong Kong
4. Department of Physics and Materials Science, City University of Hong Kong
5. Department of Applied Mathematics, The Hong Kong Polytechnic University
6. Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University
7. Department of Mechanical Engineering, The Hong Kong Polytechnic University
8. Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology
9. Department of Mechanical and Aerospace Engineering, The Hong Kong University of Science and Technology
10. Department of Mechanical Engineering, The University of Hong Kong
11. Department of Civil and Environmental Engineering, University of Macau
12. Department of Electromechanical Engineering, University of Macau

3 Executive Committee of HKSTAM for 2017-2018

President	Prof. Li CHENG (成利), Department of Mechanical Engineering, The Hong Kong Polytechnic University (Email: mmlcheng@polyu.edu.hk, Tel: 27666769)
Vice President	Dr. Paul H. F. LAM (林向暉), Department of Civil and Architectural Engineering, City University of Hong Kong (Email: paullam@cityu.edu.hk, Tel: 34427303)
Secretary	Prof. Z. Q. SU (蘇眾慶), Department of Mechanical Engineering, The Hong Kong Polytechnic University (Email: mmsu@polyu.edu.hk, Tel: 67476317)
Treasurer	Dr. Shuhuai YAO (姚舒懷), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meshyao@ust.hk, Tel: 23587205)
Immediate Past President	Dr. Y. K. LEE (李貽昆), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meylee@ust.hk, Tel: 23588663)
Members-at-large	Prof. C. K. CHAN (陳昌麟), Department of Applied Mathematics, The Hong Kong Polytechnic University (Email: ck.chan@connect.polyu.hk, Tel: 96885638)
	Dr. Zhigang LI (李志剛), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: mezli@ust.hk, Tel: 23587186)
	Dr. C. W. LIM (林志華), Department of Civil and Architectural Engineering, City University of Hong Kong (Email: bccwlim@cityu.edu.hk, Tel: 34427285)
	Dr. Yuan LIN (林原), Department of Mechanical Engineering, The University of Hong Kong (Email: ylin@hku.hk, Tel: 28597955)
	Dr. Yang LU (陸洋), Department of Mechanical and Biomedical Engineering, City University of Hong Kong (Email: yanglu@cityu.edu.hk, Tel: 34424061)
	Dr. Xinrui NIU (牛鑫瑞), Department of Mechanical and Biomedical Engineering, City University of Hong Kong (Email: xinrui.niu@cityu.edu.hk, Tel: 34428432)
	Dr. Konstantinos (Kostas) SENETAKIS, Department of Civil and Architectural Engineering, City University of Hong Kong (Email: ksenetak@cityu.edu.hk, Tel: 34424312)
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	Dr. Gang WANG (王剛), Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology (Email: gwang@ust.hk, Tel: 23587161)
	Dr. Chih-Yung Wen (溫志湧), Department of Mechanical Engineering, The Hong Kong Polytechnic University (Email: cywen@polyu.edu.hk, Tel: 23654703)
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	Dr. Wenjing YE (葉文菁), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: mewye@ust.hk, Tel: 23587194)
	Dr. Jidong ZHAO (趙吉東), Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology (Email: jzhao@ust.hk, Tel: 23588481)
	Dr. Wan-Huan ZHOU (周萬歡), Department of Civil and Environmental Engineering, University of Macau (Email: hannahzhou@umac.mo, Tel: +853 8822-2426)
IUTAM Representative	Prof. Q. P. SUN (孫慶平), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meqpsun@ust.hk, Tel: 2358 8655)

4 New Executive Committee of HKSTAM for 2018-2020

On the EC meeting on 14 April 2018, new President, Vice President, Secretary, Treasurer and EC members were nominated. The new EC is listed as below:

President	Dr. Paul H. F. LAM (林向暉), Department of Civil and Architectural Engineering, City University of Hong Kong (Email: paullam@cityu.edu.hk, Tel: 34427303)
Vice President	Dr. Gang WANG (王剛), Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology (Email: gwang@ust.hk, Tel: 23587161)
Secretary	Dr. Konstantinos (Kostas) SENETAKIS, Department of Civil and Architectural Engineering, City University of Hong Kong (Email: ksenetak@cityu.edu.hk, Tel: 34424312)
Treasurer	Dr. Shuhuai YAO (姚舒懷), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meshyao@ust.hk, Tel: 23587205)
Immediate Past President	Prof. Li CHENG (成利), Department of Mechanical Engineering, The Hong Kong Polytechnic University (Email: mmlcheng@polyu.edu.hk, Tel: 27666769)
Members-at-large	Prof. C. K. CHAN (陳昌麟), Department of Applied Mathematics, The Hong Kong Polytechnic University (Email: ck.chan@connect.polyu.hk, Tel 96885638)
	Dr. Duruo HUANG (黃杜若), Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology (Email: huangdr@ust.hk, Tel: 23582684)
	Dr. Y. K. LEE (李貽昆), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meyklee@ust.hk, Tel: 23588663)
	Dr. Zhigang LI (李志剛), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: mezli@ust.hk, Tel: 23587186)
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	University of Macau (Email: hannahzhou@umac.mo, Tel: +853 8822-2426)
IUTAM Representative	Prof. Q. P. SUN (孫慶平), Department of Mechanical Engineering, Hong Kong University of Science and Technology (Email: meqpsun@ust.hk, Tel:2358 8655)