

## ➤ Faculty Awards and Honors

The National Natural Science Foundation of China has recently announced the 2015 list of funded projects. Among the 17 projects applied by the JI faculty, 8 (47.1%) have secured the funding. Over the past 5 years, a total of 33 projects from the Joint Institute have won the prestigious grant, with an average successful rate of 47.8% annually, which reflects JI faculty's high level in research. Notably, this year 3 out of the 8 winning projects are from

non-Chinese faculty members, bringing the total of foreign faculty winners to 8 over the 5 years. Awardees this year are Shane Johnson (2 winning projects), Morteza Eslamian, Tian Yang, Yunlong Guo, Weikang Qian, Bin Guan and Yong Long. Congratulations! The following is the list of the funded projects and application information in recent five years.

	Name	Project Title	Program Type	Grant (RMB)	Start and End Dates
	Bin Guan (Postdoc)	Single atom doping of silicon by self-assembly of macromolecules	Young Scientist	210,000	2016-1 to 2018-12
	Yong Long	Multi-material decomposition using reconstruction methods for low-dose dual-energy CT	Young Scientist	210,000	2016-1 to 2018-12
	Shane Johnson	Biomechanical study of the Plantar Aponeurosis and development of orthoses with tunable stiffness based on finite element modeling and gait analysis	Young Scientist	210,000	2016-1 to 2018-12
		Constitutive multi-scale region specific modeling of the plantar soft tissue	International Young Scientist	339,000	2016-1 to 2017-12
	Morteza Eslamian	Fundamental study on the structure and the fabrication of thin film planar perovskite solar cells by ultrasonic spray coating	International Young Scientist	350,000	2016-1 to 2017-12

	Weikang Qian	Design and synthesis of combinational circuits for approximate computing	General Program	580,000	2016-1 to 2019-12
	Yunlong Guo	Study on a rapid and highly controllable method for ultra-stable polymer anti-reflective coating	General Program	650,000	2016-1 to 2019-12
	Tian Yang	Reproducible measurement of single molecule Raman scattering: experiment and physics	General Program	730,000	2016-1 to 2019-12

2011-2015 Application/Grant List-All Faculty					
	2011	2012	2013	2014	2015
Submitted	14	17	10	11	17
Granted	8	5	8	4	8

2011-2015 NSFC Application/Grant List-Int'l Faculty					
	2011	2012	2013	2014	2015
Submitted	5	4	3	3	4
Granted	2	1	1	1	3

For detailed news, please visit <http://umji.sjtu.edu.cn/news/ji-faculty-scores-high-in-2015-nsfc-funding/>

## ➤ Spotlight

### Selected Research Papers:

*Study of Time-Resolved Vortex Structure of In-Cylinder Engine Flow Fields Using Proper Orthogonal Decomposition Technique*

*Hanyang Zhuang, David L. S. Hung and Hao Chen*

*J. Eng. Gas Turbines Power 137(8), 082604 (Aug 01, 2015) (7 pages) Paper No: GTP-14-1657; doi: 10.1115/1.4029600*

*Received December 08, 2014; Revised January 07, 2015; Online February 10, 2015*

**Abstract:** The structure of in-cylinder flow field makes significant impacts on the processes of fuel injection, air–fuel interactions, and flame development in internal combustion engines. In this study, the implementation of time-resolved particle image velocimetry (PIV) in an optical engine is presented. Flow field PIV images at different crank angles have been taken using a high-speed double-pulsed laser and a high-speed camera with seeding particles mixed with the intake air. This study is focused on measuring the flow fields on the swirl plane at 30mm below the injector tip under various intake air swirl ratios. A simple algorithm is developed to identify the vortex structure and to track the location and motion of vortex center at different crank angles. Proper orthogonal decomposition (POD) has been used to extract the ensemble and variation information of the vortex structure. Experimental results reveal that strong cycle-to-cycle variations exist in almost all test conditions. The vortex center is difficult to identify since multiple, but small scale, vortices exist during the early stage of the intake stroke. However, during the compression stroke when only one vortex center exists in most cycles, the motion of vortex center is found to be quite similar at different intake swirl ratios and engine speeds. This is due to the dominant driving force exerted by the piston's upward motion on the in-cylinder air.



**Hanyang Zhuang**, a Ph.D. student of Professor David L.S. Hung, received an outstanding paper award of the Graduate Student Technical Paper Competition Session in the 2014 ASME 4<sup>th</sup> Joint US-European Fluids Engineering Division Summer Meeting in Chicago in August 2014, organized by the American Society of Mechanical Engineers (ASME).



**David L.S. Hung**, associate professor, UM-SJTU Joint Institute, Fellow of SAE, Member of ASME.



**Hao Chen**, Department of Mechanical Engineering, The University of Michigan, 2026 W. E. Lay Automotive Laboratory, Ann Arbor.

The ASME Journal of Engineering for Gas Turbines and Power is edited by Dr. David Wisler, and it has a 5-year impact factor of 0.927. This journal focuses on areas related to thermodynamics, fluid mechanics, as well as practical topics of interest to industry such as power systems, control and simulation. High-quality papers are collected and published to make this journal one of the leading research publications for internal combustion engines. This journal archives excellent papers from numerous ASME conferences to broaden its influence.



## ➤ Events

### Jl Delegation Visit Carestream

On Aug 10, a group of JI faculty, Tian Yang, Jigang Wu, Sungliang Chen, Yong Long, etc., led by Associate Dean Xinwan Li, visited Carestream Global R&D Center (Shanghai). Dr. Xi Wang, the general manager of Carestream with their research and development team gave a detailed introduction on company's history, leadership and research career. Afterwards, the managers from radiography, healthcare information system, dental practices presented their current dental and medical imaging systems and IT solutions, X-ray imaging systems for non-destructive testing, and advanced materials for precision films and electronics markets. And JI faculty members including Prof. Yong Long, Tian Yang, Jigang Wu, Sungliang Chen, and Kai Xu introduced their research interests and achievement. A discussion session was held following their presentation to exchange ideas and make future plans in project application and cooperation, joint training programs for students. Both sides spread the strong interest in phase contrast imaging field and the collaboration agreement will be ready soon for this coming opportunity.



Carestream Health has been part of the Onex family of companies since 2007. Onex is one of Canada's largest and most respected corporations. With operation in 170 countries and more than 800 patents for medical and dental imaging, and information technology, Carestream remains at the forefront of numerous technological advancements in imaging and healthcare IT. This is their first time for Carestream to cooperate with universities and they had paid visit to JI in June previously this year. If you would like to learn more about this company, please visit at [www.carestream.com](http://www.carestream.com).

## Seminars



### 1. 2D Transition Metal Dichalcogenide Materials: Towards Atomic-scale Catalysis and Photonics

Prof. Linyou Cao, North Carolina State University

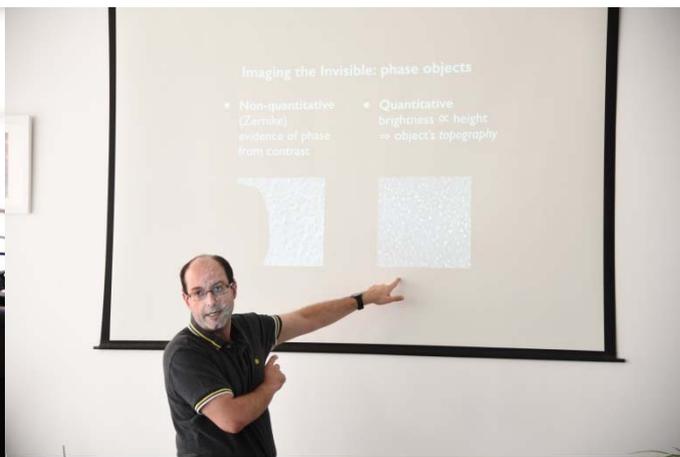
Invited by: Prof. Yongxing Shen

Prof. Linyou Cao presented his talk on Aug. 4th (Tuesday), 2015 at 415 conference room of JI building. There were about 20 people attending the talk, including 5 JI faculty members. The hot topics discussed were the fabrication techniques of atomically thin MoS<sub>2</sub> films that Cao and his team designed, and new fundamental understanding on the catalytic and optical properties of such thin films.

### 2. Compressive phase retrieval

Prof. George Barbastathis, Massachusetts Institute of Technology

In this seminar, he described in particular the flavor of computational imaging that deals with the “phase” of light, i.e. the delay that light waves experience as they go through matter. This delay cannot be seen by naked eye, and thus some form of computation is necessary for phase retrieval. This is usually considered as a hard “inverse problem” but recently, the use of sparsity priors has come to the rescue as a way to retrieve the information efficiently and accurately even in the presence of strong noise. He briefly introduced the problem of phase retrieval for non-physicists, and then show examples from real experiments as well present the caveats and design principles of computational imaging for phase retrieval.



## UPCOMING EVENTS

Please submit **Research Funding**

**Self-Checking-Self-Correction Questionnaire** to Laura at room 320 (lauxu@sjtu.edu.cn) before Sep. 10.

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