

Biographical Sketch of Luqiao Liu

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Education and Training

Cornell University, Ithaca, NY	Ph.D. in Applied Physics	Aug 2012
Peking University, Beijing, China	B.S. in Physics	June 2006

Research and Professional Experience

2019/07 to present	Associate Professor (untenured), MIT,	Cambridge, MA
2015/09 to 2019/06	Assistant Professor, MIT,	Cambridge, MA
2012/07 to 2015/08	Research Staff Member, IBM Watson Research,	Yorktown Heights, NY

Selected Publication

1. P. Zhang, J. Finley, T. Safi and L. Liu, "Quantitative Study on Current-Induced Effect in an Antiferromagnet Insulator/Pt Bilayer Film", *Physical Review Letters*, in press (2019)
2. J. Han, P. Zhang, J. T. Hou, S. A. Siddiqui, and L. Liu, "Mutual control of coherent spin waves and magnetic domain walls in a magnonic device", *Science* 366, 1121 (2019)
3. J.T. Hou and L. Liu, "Strong Coupling between Microwave Photons and Nanomagnet Magnons", *Physical Review Letters*, 123, 107702 (2019)
4. D. MacNeill, J. Hou, D.R. Klein, P. Zhang, P. Jarillo-Herrero and L. Liu, "Gigahertz frequency antiferromagnetic resonance and strong magnon-magnon coupling in the layered crystal CrCl₃", *Physical Review Letters*, 123, 047204 (2019)
5. J. Finley, C.H. Lee, P. Huang, L. Q. Liu. "Spin orbit torque switching in compensated Heulser Alloy," *Advanced Materials*, 1805361 (2018)
6. S. Siddiqui, J. Han, J. Finley, C. Ross, L. Q. Liu, "Current-induced domain wall motion in compensated ferrimagnet," *Physical Review Letters*, 121, 057701 (2018)
7. J. Han, A. Richardella, S. S. Siddiqui, J. Finley, N. Samarth, and L. Q. Liu. Room temperature spin-orbit torque switching induced by a topological insulator. *Physical Review Letters*, 119,077702 (2017).
8. L. Q. Liu, C. T. Chen, J. Z. Sun, "Spin Hall effect tunnelling spectroscopy", *Nature Physics*, 10, 561-566 (2014).
9. L.Q. Liu, C.-F. Pai, Y. Li, H. W. Tseng, D. C. Ralph and R. A. Buhrman, "Spin torque switching with the giant spin Hall effect of tantalum", *Science*, **336**, 555, (2012)
10. L. Q. Liu, C.F. Pai, D. C. Ralph and R. A. Buhrman, "Magnetic oscillations driven by the spin Hall effect in 3-terminal magnetic tunnel junction devices", *Physical Review Letters*, 109, 186602 (2012)

Selected Invited Conference Talks

1. 2019 Annual Conference on Magnetic Materials and Magnetism, Las Vegas, NV, 2019, "Strong Coupling of magnon-magnon and magnon-microwave photon"
2. 2018 International Conference on Magnetism, San Francisco, CA, 2018, "Magnetic Switching with Compensated Ferrimagnet and Topological Insulator".
3. 2018 APS March Meeting, Los Angeles, CA, 2018, "Magnetic Switching with Compensated Ferrimagnet and Topological Insulator".
4. 2017 15th RIEC International Workshop on Spintronics, Tohoku University, Sendai, Japan, 2017, "Magnetic Switching with Compensated Ferrimagnet and Topological Insulator"
5. 2017 IEEE Annual Conference on Magnetic Materials and Magnetism, Pittsburg, PA, 2017, "Room temperature spin-orbit torque induced ferrimagnet dynamics with topological insulator"
6. 2017 SPIE Optics+Photonics Conference, San Diego, CA, 2017, "Non-volatile Memory with zero magnetic moment"
7. 2015 IEEE International Magnetism Conference, Beijing, China, 2015, "Spin polarized tunneling study on spin Hall metals and topological insulators"
8. APS March meeting, San Antonio, TX, 2015 "Spin polarized tunneling study on spin Hall metals and topological insulators"
9. 12th joint Magnetism and Magnetic Materials with IEEE International Magnetism Conference, Chicago, IL, 2013 "Spin Hall effect induced switching and magnetic oscillation"
10. APS March meeting, Boston, MA, 2012, "Spin torque phenomena originating from the spin Hall effect: resonance, magnetic switching, and dynamics"

Selected Patents

1. "Spin Hall effect magnetic apparatus, method and applications", US9105832B2
2. "Electrically gated modulation of spin Hall torque effects in magnetic nanostructure apparatus, methods and applications", US20150200003A1
3. "Spin Hall effect assisted spin transfer torque magnetic random access memory", US8889433
4. "Spin hall write select for magneto-resistive random access memory", US 9947383

Awards

AFOSR Young Investigator Award, 2018

International Union of Pure and Applied Physics Young Scientist Award, 2017

McMillan Condensed Matter Physics Award, 2017

NSF CAREER Award, 2017