Xiaomeng Liu

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Personal Profile:

I am Ph.D. student in Kim group at Harvard University specialized in experimental condensed matter physics. My current research directions are quantum Hall effect and exciton condensate phases in graphene heterostructures. We prepare state-of-the-art graphene devices using exfoliation, van der Waals stacking and nano-fabrication. We search for novel quantum Hall and exciton phases under low temperatures and high magnetic fields using electrical transport measurements.

Education:

Harvard University	Physics	Ph.D. candidate	07/2014 – 05/2018 (expected)
Columbia Univeristy	Applied Physics	Ph.D. candidate	09/2012 – 06/2014
Ph.D. Adviser: Philip Kim			
Columbia Univeristy	Applied Physics	M.S.	09/2012 – 05/2013
Peking University	Physics	B. S.	09/2008 – 06/2012

Publications:

1. **Liu, X.***, Li, J.I.A*, Watanabe, K., Taniguchi, T., Dean, C.R. & Kim, P. Phase transitions of 2D fermionic condensate in strong and weak coupling regime. *in preparation.*

2. **Liu, X.***, Li, J.I.A*, Watanabe, K., Taniguchi, T., Dean, C.R. & Kim, P. Exciton insulator phase in electron-hole graphene double-layer. *in preparation.*

3. **Liu. X,** et al., Exciton condensation and Coulomb drag in graphene double-layer heterostructures. invited review, *Front. Phys. in preparation.*

4. Jiang, B., Ni, G., Addison, Z., Shi, J., **Liu, X.**, Zhao, S., Kim, P., Mele, E., Basov, D., Fogler, M. Plasmon reflections by topological electronic boundaries in bilayer graphene. *Nano Lett. accepted* (2017)

5. **Liu, X.**, Watanabe, K., Taniguchi, T., Halperin, B. I. & Kim, P. Quantum Hall Drag of Exciton Superfluid in Graphene. *Nature Physics 13, 746-750* (2017).

6. **Liu, X.**, Wang, L., Fong, K. C., Gao, Y., Maher, P., Watanabe, K., Taniguchi, T., Hone, J., Dean, C. & Kim, P. Frictional Magneto-Coulomb Drag in Graphene Double-Layer Heterostructures. *Phys. Rev. Lett., 119, 056802* (2017).

7. Crossno, J., Shi, J. K., Wang, K., **Liu, X.**, Harzheim, A., Lucas, A., Sachdev, S., Kim, P., Taniguchi, T., Watanabe, K., Ohki, T. A. & Fong, K. C. Observation of the Dirac fluid and the breakdown of the Wiedemann-Franz law in graphene. *Science 351, 1058–1061 (2016).*

8. Shimazaki, Y., Yoshizawa, T., Borzenets, I. V., Wang, K., **Liu, X.**, Watanabe, K., Taniguchi, T., Kim, P., Yamamoto, M. & Tarucha, S. Landau level evolution driven by band hybridization in mirror symmetry broken ABA-stacked trilayer graphene. *arXiv: 1611.02395 (2016).*

9. Crossno, J., **Liu, X.**, Ohki, T. A., Kim, P. & Fong, K. C. Development of high frequency and wide bandwidth Johnson noise thermometry. *Appl. Phys. Lett. 106, 23121 (2015).*

Presentations:

"Quantum Hall drag of exciton condensation in bilayer graphene double layer" APS March Meeting, March 2017

"Exciton superfluidity in graphene double layers" BACON+ Meeting, Sep 2016

"Coulomb drag and exciton condensation in graphene quantum hall double layers" ICPS, Aug 2016

"Anomalous Coulomb drag in bilayer graphene double layers" APS March Meeting, March 2016

"Anomalous Coulomb drag in bilayer graphene double layers" Big Ideas in Quantum Material, Dec 2015

"Coulomb drag in graphene quantum Hall bilayer systems" APS March Meeting, March 2015

"Magneto and Hall drag in graphene double-layer" APS March Meeting, March 2014

Expertise:

Graphene *2D heterostructure stacking* *Cryogenics (VTI, He3 and dilution-refrigerator)*

Nano-fabrication *Quantum Hall effect* *Low-noise electrical measurements*

Condensed Matter Physics *Matlab* *Electronics*

Skills:

Machining (CNC Mill, Lathe, laser cutter) *2D&3D modelling (AutoCAD, Fusion360, Solidworks)*

C *Web designing (html, css, bootstrap, Wordpress)* *Circuits design (EAGLE CAD)*

Embedded system and programming (AVR microcontroller, AVR-C) *Illustrator&Photoshop*