

K A T E R Y N A P I S T U N O V A

EMAIL: KPISTUNOVA@STANFORD.EDU

EDUCATION

- **Ph.D. in Physics**, Stanford University (2018 - present)
- **B.S. in Physics**, Harvard University (2015 - 2018)

RESEARCH EXPERIENCE

- **Philip Kim group, Harvard University** (2015-2018)
 - Studying electron-electron correlation and superconductivity in moiré flat bands of small twist-angle WSe₂ homobilayers
 - Electric control of interlayer exciton dynamics in van der Waals heterostructures: engineering long-lived interlayer excitons in coupled quantum wells based on heterostructures of 2D semiconductors with full electric field and carrier density control
 - Observations of Shubnikov–de Haas oscillations and measurements of the hole effective mass in single and double layer 2D semiconductor WSe₂
 - Fabrication of ohmic contacts to two-dimensional semiconductors by work-function engineering and x-ray photoemission spectroscopy (XPS) measurements

PUBLICATIONS

1. Zhou, Y., Scuri, G., Wild, D. S., High, A. A., Dibos, A., Jauregui, L. A., Shu, C., De Greve, K., **Pistunova, K.**, Joe, A. Y., Taniguchi, T., Watanabe, K., Kim, P., Lukin, M. D. & Park, H. “Probing dark excitons in atomically thin semiconductors via near-field coupling to surface plasmon polaritons.” *Nature Nanotechnology* 12, 856 (2017).
2. Cui, X., Shih, E. M., Jauregui, L. A., Chae, S. H., Kim, Y. D., Li, B. C., Seo, D., **Pistunova, K.**, Yin, J., Park, J. H., Choi, H. J., Lee, Y. H., Watanabe, K., Taniguchi, T., Kim, P., Dean, C. R. & Hone, J. C. “Low-Temperature Ohmic Contact to Monolayer MoS₂ by van der Waals Bonded Co/h-BN Electrodes.” *Nano Letters* 17, 4781-4786 (2017).
3. Wintz, D., Chaudhary, K., Wang, K., Jauregui, L. A., Ambrosio, A., Tamagnone, M., Zhu, A. Y., Devlin, R. C., Crossno, J. D., **Pistunova, K.**, Watanabe, K., Taniguchi, T., Kim, P. & Capasso, F. “Guided Modes of Anisotropic van der Waals Materials Investigated by Near-Field Scanning Optical Microscopy.” *ACS Photonics* 5, 4, 1196-1201 (2018)

RESEARCH PRESENTATIONS

1. “Gate dependent electroluminescence of interlayer excitons in 2D semiconductor heterostructures”, **9th International Conference on Spontaneous Coherence in Excitonic Systems**, Montreal, Canada, 2018.

2. “Quantum transport and exciton dynamics in atomically thin semiconductors”, **Bacon+**, MIT, Cambridge, 2018.
3. “Gate dependent electroluminescence of interlayer excitons in 2D semiconductor heterostructures”, **APS March Meeting**, Los Angeles, 2018.
4. “Gate dependent electroluminescence of interlayer excitons in 2D heterostructures”, **Valleytronics Workshop**, MIT, Cambridge, 2017.
5. “Gate dependent electroluminescence of interlayer excitons in two-dimensional heterostructures”, **International Conference on Physics of Light-Matter Coupling in Nanostructures (PLMCN 18)**, Würzburg, Germany, 2017.
6. “Fabrication of Ohmic Contacts to Atomically-thin transition metal dichalcogenides by Work function Engineering”, **APS March Meeting**, New Orleans, 2017.
7. “Towards Electrically Controlled High Temperature Interlayer Exciton Superfluids”, **The Harvard College Program for Research in Science and Engineering (PRISE)**, Harvard, Cambridge, 2016.

RESEARCH SKILLS

- **Measurements & Nano Device Characterization**
 - Electrical measurements, low temperature & magnetic field measurements, ultra high magnetic field measurements (up to 32T) at the National High Magnetic Field Laboratory (NHMFL), cryogenics, high vacuum systems, photoluminescence, absorption and Raman spectroscopy, x-ray photoluminescence (XPS) spectroscopy
- **Cleanroom & Nanofabrication**
 - Optical and Electron beam lithography, physical and atomic layer deposition (PVD & ALD), focused ion beam microscopy (FIB), scanning electron beam microscopy (SEM), atomic force microscopy (AFM), reactive ion etching (RIE)
- **Programming Languages & Simulation Software**
 - Lumerical, MATLAB, IGOR, LaTeX