Kraig J. Andrews

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Research Interests

Two-dimensional materials, nanotechnology, transition metal dichalcogenides, field-effect transistors, semiconductor physics, materials physics

Education

Wayne State University, Detroit, MI — *expected* 2018

Ph.D., Physics

- Thesis Topic: "Intrinsic Channel Properties, Scattering Mechanisms, and Quantum Transport Properties in Transition Metal Dichalcogenides"
- Advisor: Zhixian Zhou, Ph.D

Wayne State University, Detroit, MI — 2016

M.S., Physics, Feb 2016

Michigan State University, East Lansing, MI — 2014

B.S., Physics and Astrophysics (Double Major)

Research Experience

Graduate Research Assistant — 2015–Present
Nano Fabrication and Electron Transport Laboratory,
Department of Physics and Astronomy,
Wayne State University
Supervisor: Zhixian Zhou, Ph.D.

Graduate Research Fellow — 2017
π- Electronics Research Group,
National Institute for Materials Science (NIMS) (国立研究開発法人物質・材料研究機構),
Tsukuba, Ibaraki Prefecture, Japan
Supervisor: Kazuhito Tsukagoshi, Ph.D.

Undergraduate Researcher — Jan 2014–May 2014
International Course on Computational Physics (ICCP)
Michigan State University and Technische Universiteit Delft
East Lansing, MI USA and Delft, Netherlands
Supervisors: Phil Duxbury, Ph.D. and Jos Thijssen, Ph.D.

Undergraduate Research Assistant — Feb 2013–Dec 2013
Neutron Star Evolution and Developmental Limits,
Department of Astronomy,
Michigan State University
Supervisor: Edward Brown, Ph.D

Undergraduate Research Assistant — May 2012–Jan 2013
High Resolution Array Group (HIRA): SAMURAI-TPC Project
National Superconducting Cyclotron Laboratory,
Michigan State University
Supervisors: William Lynch, Ph.D. and Betty Tsang, Ph.D.

Industry Experience

Summer Intern Jun 2013–Aug 2013

Jenoptik Laser Technologies, Brighton, MI USA
Contributed in development of user interface for laser welding machine that allows user manipulation of robotic end-arm tooling. Using microcontroller program via interfaced electronic devices and several developed algorithms machine was able to analyze physical data and feedback.

Publications

1. Chamlagain, B., Perera, M., Chuang, H.J., Bowman, A., Rijal, U., **Andrews, K.**, Klesko, J., Winter, C., Zhou, Z. "Substrate dependence of Hall and Field-effect mobilities in few-layer MoS_2 field-effect transistors." *Manuscript in preperation*, 2016.

Conference Publications

1. Chamlagain, B., Perera, M., Chuang, H.J., Bowman, A., Rijal, U., **Andrews, K.**, Klesko, J., Winter, C., Zhou, Z. "Substrate dependence of Hall and Field-effect mobilities in few-layer MoS_2 field-effect transistors." Bulletin of the American Physical Society, 2016.

Honors and Awards

Teaching Experience

Teahcing Assistant, General Physics II, Wayne State University	Winter 2017
Teaching Assistant, General Physics II, Wayne State University	Autumn 2016
Teaching Assistant, General Physics I, Wayne State University	Summer 2016
Teaching Assistant, General Physics I, Wayne State University	Autumn 2015
Teaching Assistant, General Physics Lab I, Wayne State University	Summer 2015
Laboratory Instructor, Conceptual Physics, Wayne State University	Winter 2015
Laboratory Instructor, Descriptive Astronomy, Wayne State University	Winter 2015
Laboratory Instructor, Descriptive Astronomy, Wayne State University	Autumn 2014
Teaching Assistant, Introductory Physics II, Michigan State University	Winter 2014
Laboratory Instructor, Planets and Telescopes, Michigan State University	Winter 2013
Teaching Assistant, Introductory Physics I, Michigan State University	Autumn 2013
Teaching Assistant, Introductory Physics II, Michigan State University	Winter 2012

Relevant Skills

Nanofabrication:
Atomic Force Microscopy (AFM), Electron Beam Lithography, Photolithography, Computer-Aided Design (CAD), Scanning Electron Microscopy (SEM), General Clean Room Abilities, Physics Vapor Depsoition (PVD), Electron Beam Deposition, Atom Layer Deposition (ALD), Plasma Etching, Reactive Ion Etching.

Programming:
C, C++, Fortran, GNU make, HTML, CSS, Python, UNIX shell scripting, and Visual Basic

Data Analysis:
GNU octave, Kaleidagraph, LabView, MATLAB, Mathematica, Microsoft Excel

Operating Systems:
Apple OS X, Linux OS, Microsoft Windows Family

Editing and Typesetting:
TEX/LATEX, BIBTEX, Microsoft Office, OpenOffice, LibreOffice, GIMP, InkScape

Version Control:
Git, Mercurial, SVN

Relevant	Methods of Engineering Analysis II
Graduate	Advanced Quantum Mechanics I & II
Coursework	Survey of Condensed Matter Physics
	Statistical Mechanics
	Electrodynamics
	Thermal Physics