Haimeng Zhang
Electrical Engineering Ph.D. student at University of Southern California
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EDUCATION

Ph.D. student in Electrical Engineering Aug. 2016 - Present
University of Southern California (USC)
Electrophysics direction, GPA: 3.56/4.0

Bachelor of Science in Physics Sept. 2012 - Jun. 2016
University of Science and Technology of China (USTC)
Major: Condensed Matter Physics, GPA: 3.46 /4.3
Graduation Thesis: Decoherence During Inflation and Its Effects on the Cosmic Microwave Background (Advisor: Prof. Yifu Cai)

AWARDS

Successful Completion as SHINE Research Mentor, USC	2017
14th Challenge Cup Competition (Grand Prize in Anhui Province, China)	2015
Student Leadership Awards, USCT	2015
10th Competition of Physical Research Experiment (Grand Prize), USTC	2014
China Undergraduate Physicists' Tournament (Best Presentation Award)	2014
Scholarship for Outstanding Students (Silver Award, top 20%), USCT	2014 and 2015
Scholarship for Outstanding Students (Bronze Award, top 30%), USTC	2012 and 2013

RESEARCH EXPERIENCE

Department of Electrical Engineering, USC, Advisor: Prof. Han Wang Aug. 2016 - Present

- **Synaptic Metaplasticity Realized in Junction-Based Artificial Synaptic Device**
  - Fabricating an artificial synaptic device which utilizes the tunable electronic properties of the heterojunction with layered black phosphorus as transistor channel material and titanium oxide as memristive switching layer;
  - Demonstrating synaptic metaplasticity (a higher-order form of the synaptic plasticity and a key feature in brain's learning machinery) using this device, which shows its potential to enable useful functionalities in hardware-based artificial neural network.
- Worked on the book chapter "Two-Dimensional Materials for Electronic Applications" for the book entitled "Advanced Nanoelectronics, Post-Silicon Materials and Devices", Wiley, manuscript submitted.

Summer research program, Department of Physics, University of Western Australia, Advisor: Prof. Mikhail Kostylev Jul. 2015 - Aug. 2015

- **Microwave Magnetic Dynamics in Ferromagnetic Metallic Nanostructures Lacking Inversion Symmetry**
  - Built numerical codes to simulate the Ferromagnetic Resonance (FMR) response of the metallic ferromagnetic Cobalt/Permoally bi-layer thin films which are important materials for microwave spintronics;
  - Theoretically investigated the impact of the geometrical symmetries on the FMR response which helped to understand the mechanism of the inversion symmetry break and the dynamic properties of these structures.

Department of Physics, USTC, Advisor: Prof. Zengming Zhang Jun. 2014 - Dec. 2014

- **Upconversion Nanoparticles as Fluorescence Bioimaging Probe**
  - Introduced an "ligand removal" approach to achieve better solubility of $NaGdF_4$:Yb:Er as a biocompatible probe to label biomolecules in live cells;
  - Optimized the brightness of the particles with different dopant concentration and protective shell thickness with the optical and morphological characterization.

RESEACH SKILLS

Computer skills: C/C++, Matlab, Mathcad, Monte Carlo.
Material synthesis: chemical vapor deposition, hydrothermal synthesis.
Material characterization: scanning electron microscope, atomic force microscope, Raman spectroscopy, electrical measurement (probe station).
Device fabrication: electron-beam lithography, inductively coupled plasma etching, photolithography, thermal evaporation, electron-beam evaporation.