Jinxin HU

No.7 Rue Theophile Gautier, Montrouge, FR 92120
jinxin.hu@espci.psl.eu · Homepage · (+33)786401659 · Jacob

Education

Harbin Institute of Technology — August 2016 - July 2020
School of Physics — Applied Physics B.Sc.

ESPCI Paris - PSL — September 2020 - July 2021
Diplôme d'ingénieur in Physics, Chemistry, Biology — Engineer Student

École polytechnique fédérale de Lausanne — August 2021 - Present
Institute of Physics — Applied Physics M.Sc.

Experience

Study of the Luminescence of Dye-doped Polymer Layer coated on the $LiNbO_3$ Surface
Role: Degree Thesis Research — *November 2019 - June 2020*
Advisor: Prof. Hua Zhao, Harbin Institute of Technology

- Studying and using the bulk photovoltaic effect to control $LiNbO_3$ surface electric field and its binary phase grating
- To study how $LiNbO_3$ surface two-dimensional electron gases (2DEGs) are influenced by bulk photovoltaic effect
- To study how the excitation of visible light surface plasmon polariton is influenced and how it can be manipulated
- To study how the luminescence of dye-doped polymer can be influenced by surface plasmon polariton
- A prototype for visible light surface plasmon amplification by stimulated emission of radiation (SPASER)

Study of Electro-convection and Electro-thermo-convection of Dielectric Liquids
Role: Undergraduate Research Assistant — *November 2017 - June 2020*
Advisor: Prof. Jian Wu, Harbin Institute of Technology (1000 Young Overseas High-level Talents Introduction Plan)

- Built a two-dimension two-component (2D2C) particle image velocimetry (PIV) system for experiment fluid dynamics
- Experiment on electrohydrodynamic (EHD) flow characteristics of dielectric liquids
- Used computational fluid dynamics method to simulate flow in a needle-plate configuration under AC/DC electric field
- By controlling AC/DC electric field to optimize flow control and thermal management
- Some of the work has been published in the XI International Symposium on Electrohydrodynamics (ISEHD 2019)

Projects

Stereo Particle Image Velocimetry System Building and Its Image Processing
Research Assistant Project — *03.2019 - Present*
Fabrication of a PIV system from basic components, and based on the *OpenPIV* (open-sourced) to develop programs to obtain the three-component velocity field of fluids in a planar region illuminated by a light sheet laser, with the current progress of having finished the building of a 2D2C PIV system. The final goal is to build a 2D3C PIV system.

Optical Design and Algorithms Development for Light Field Cameras
2018 Undergraduate Training Programs for Innovation & Entrepreneurship of China — *11.2018 - 11.2019*
Light field camera is a new type of camera using an array of micro-lenses placed in front of an otherwise conventional image sensor to sense light field including intensity, color, and directional information. It can change focus, change perspective and fine control of field depth after shooting. This project is committed to improving the image quality and image processing speed for light field cameras via compressed sensing algorithms and optimized optical design conducted by Zemax, which indicates a possible solution for the over large data problem of light field video.

High-Performance Computing Server Cluster

Research Assistant Project *06.2018 - 07.2018*

Built a high-performance computer server platform in Linux environment from 6 high-performance computers, 1 disk array and 1 lan switch. Fulfilled several functions including parallel computing, local communication, remote control, task queue sorting, data synchronization, etc., and responsible for its maintenance.

Design and Implementation of Low Power Embedded Application System

Curriculum Design Project *01.2018 - 05.2018*

Design of a low power embedded temperature measuring system both in hardware and software, including system design, PCB design, circuit board soldering, code implementation, system test, robustness verification, etc.

Rotor Unmanned Aerial Vehicle

Student Association Innovation Project *01.2018 - 05.2018*

Based on *DJ naza* flight controller, managed to design and assemble a quad-rotor UAV and realized the function of automatic flying control by using *Paparazzi* in ground station.

Publication

1. Zhihao Sun[1], Dexin Sun[1], **Jinxin Hu**[1], Philippe Traore[2], Hongliang Yi[3], Jian Wu*. Experimental study on EHD flows of a dielectric liquid in a needle-plate configuration under DC/AC electric field. *Journal of Electrostatics*. 2020.

Awards

Scholarship of 2020 China Scholarship Council (CSC) Jun 2020

Honorable Mention of 2019 Mathematical Contest In Modeling (Top 24%) Apr 2019

Outstanding Student Award of Harbin Institute of Technology (Top 5%) Jan 2019

First Prize of the 2018 China Undergraduate Mathematical Contest in Modeling in Heilongjiang Province Dec 2018

First Prize of the 9th China Undergraduate Physics Tournament in Heilongjiang Province May 2018

Group Project Award, 3rd Place for the ANU International Summer School Project Feb 2018

Excellence Prize of the 1st Cup of Excellence 9 Alliance Undergraduate English Speech Competition Dec 2017

Second Prize of the Winter Social Practice (Top 5%) Mar 2017

Professional & Social Activities

Optical Science Intern

1^{st} Jul 2019 - 14^{th} Jul 2019

Institution: Changchun Institute of Optical Precision Machinery, Chinese Academy of Science

Social Practice Leader

Jul 2017 - Aug 2017

The Belt and Road Initiative Social Practice Team, Harbin Institute of Technology

Conducted a survey on the changes and current situation of 5 provinces along the silk road in China after the new policy.

Host

Oct 2016 - Sep 2017

Department of Host, Student Association of 201 Forum, Harbin Institute of Technology

Trained to host gala, conference, Lecture and other activities. After training, I presided over 2 conferences and 1 lecture.

Skills

Technologies: Linux, C, C++, Python, HTML, Git, Vim, LaTeX, LAPACK, Verilog HDL, C51, Arduino

Software: MATLAB, Comsol, Origin, Adobe Illustrator, Multisim, Keil, Altium Designer, ZEMAX, Microsoft Office

Research Interest

My field of interest lies in optical science and technology. Particularly, I want to focus on optical device development both in the micro-level and classical instrument level. I am also very interested in optics combined with computer science, electronic engineering and mechanical engineering because modern optical systems require a combination of them all.