Yingtian Chen

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Education

Sep. 2016- B. S. in Physics, School of Physics, Peking University, Beijing 100871, China.
GPA (cumulative): 3.76/4.00, GPA (core courses): 3.91/4.00.
Core Courses:

- Methods of Mathematical Physics (97/100);
- Theoretical Mechanics (99/100);
- Equilibrium Statistical Physics (course: 89/100, seminar: 93/100);
- Electrodynamics (89/100);
- Quantum Mechanics (course: 95/100, seminar: 98/100);
- Modern Physics Laboratory (91/100);
- Frontier Physics Laboratory (92/100);
- Computational Physics (99/100).

Major Research Experiences

Jul. 2019- Research assistant at Massachusetts Institute of Technology;
Evolution of Giant Molecular Clouds (GMCs).
Advisor: Prof. Mark Vogelsberger & Dr. Hui Li.

- Simulated the evolution of GMCs from different initial density profiles.
- Analyzed and proposed two star formation modes of GMCs.
- Quantified and explained the kinetic evolution of massive star clusters.

Mar. 2018- Undergraduate research program at Peking University;
Light Speed Variation from Gamma-ray Bursts (GRBs).
Advisor: Prof. Bo-Qiang Ma.

- Analyzed the GRB data from the Fermi Gamma-ray Space Telescope (FGST).
- Proposed a novel stage of GRBs based on a machine learning method.
- Improved the characterization method of cosmic light speed variation.

Publications

1. **Y. Chen**, H. Li and M. Vogelsberger, *Effects of Initial Density Profiles on Massive Star Cluster Formation in Giant Molecular Clouds*, to be submitted (see yingtianchen.com for updates).
2. **Y. Chen** and B.-Q. Ma*, *Novel Pre-burst Stage of Gamma-ray Bursts from Machine Learning*, arXiv:1910.08043 [astro-ph.HE].

Selected Honors & Awards (See website for certificates)

May 2019 Xingcheng Forum;
-**First Prize** (top 3 out of all participants).
-Best Speaker Prize (top 5 out of all participants).

May 2019 **-Huabao Funding for Undergraduate Research Program.**

Dec. 2018 -**National Scholarship** (top 3 out of 202).

Dec. 2018 -**Pacemaker to Merit Student** (top 3 out of 202).

Apr. 2018 Mathematical Contest in Modeling (MCM; Ctrl # 73410);
-Outstanding Award (top 0.5% out of all participants);
-SIAM Award (top 2 out of all Outstanding winners).

Nov. 2015 Chinese Physics Olympiad (CPhO);
-Gold Medal (top 100 out of all participants).

Activities & course projects

Feb. 2019-
Jun. 2019 Project of course Frontier Physics Laboratory;
Electrophosphorescent Perovskite Light-Emitting Devices (PeLED).
Advisor: Prof. Lixin Xiao.

- Reproduced a PeLED device with high external quantum efficiency (EQE).
- Systematically studied and improved a modern method of fabrication.
- Developed a new technique to produce blue PeLEDs.

May. 2018-
Jul. 2018 Final project of course Comprehensive Physics Laboratory;
Three-peak mode of forced vibrating liquid.
Advisor: Prof. Luqun Zhou.

- Experimentally observed a three-peak mode in forced vibrating liquid.
- Established a "mix-mode" model to explain the three-peak mode.
- Numerically solved the hydrodynamical PDEs using MATLAB.

Mar. 2018-
May. 2018 Middle project of course Comprehensive Physics Laboratory;
Monte Carlo simulation for Franck-Hertz experiment.
Advisor: Prof. Zhi Li.

- Studied methods of Monte Carlo simulations.
- Simulated the Franck-Hertz experiment using the Monte Carlo method.
- Presented on the topic in the mid-term seminar.

Talks

Sep.2019 Seminar for visiting students, Peking University, Beijing, China;
Influence of initial conditions on the evolution of giant molecular clouds.

May. 2019 Xingcheng Forum, Peking University, Beijing, China;
Pre-burst Stage of Gamma-ray Bursts from Machine Learning.

May. 2019 Fudan University, Shanghai, China;
Light Speed Variation from Machine Learning.

Additional Information

-Fluent in English.

-Familiar with Python, MATLAB, LaTeX, Origin and C/C++.

-More than 20,000-line programming experience.

-Fruitful scientific writing experience.