

# Wei-Xiang Feng

Department of Physics and Astronomy, University of California, Riverside  
MSE 0340, 900 University Ave, Riverside, CA 92521, USA  
(951) 410-5451 | wfeng016@ucr.edu

## EDUCATION

---

<b>UNIVERSITY of CALIFORNIA, RIVERSIDE (UCR)</b> <i>PhD in Physics</i>	<b>CALIFORNIA, USA</b> Sept. 2017 – Aug. 2023
<ul style="list-style-type: none"><li>• <b>GPA:</b> 4.0/4.0</li><li>• <b>Supervisor:</b> Hai-Bo Yu</li><li>• <b>Research Topic:</b> Probing Dark Matter Physics with Supermassive Black Holes</li></ul>	
<b>NATIONAL TSING HUA UNIVERSITY (NTHU)</b> <i>M.S. in Physics</i>	<b>HSINCHU, TAIWAN</b> Sept. 2012 – June 2014
<ul style="list-style-type: none"><li>• <b>GPA:</b> 4.08 / 4.30</li><li>• <b>Supervisor:</b> Chao-Qiang Geng</li><li>• <b>Research Topic:</b> Modified Gravity Theories on Neutron Star Model</li></ul>	
<b>NATIONAL KAOHSIUNG NORMAL UNIVERSITY (NKNU)</b> <i>B.S. Major in Physics, Minor in Mathematics</i>	<b>KAOHSIUNG, TAIWAN</b> Sept. 2008 – Jun. 2012
<ul style="list-style-type: none"><li>• <b>GPA:</b> 3.91 (Physics: 3.96; Math: 3.66) / 4.00</li></ul>	

## AWARDS, HONORS AND FINANCIAL SUPPORTS

---

<b>UNIVERSITY of CALIFORNIA, RIVERSIDE (UCR)</b> <i>Dissertation Year Program Award (2022-2023)</i> <i>Anne Kernan Award (Summer 2022)</i> <i>Theoretical Advanced Study Institute in Particle Theory (TASI) Lecture 2022</i> <i>GSA Conference Travel Grant</i> <i>The 31st annual Midwest Relativity Meeting</i> <i>NCTS Annual Theory Meeting 2019: Particles, Cosmology and Strings</i>	<b>CALIFORNIA, USA</b> Jun. 06 – Jul.01, 2022 Nov. 11 – 13, 2021 Dec. 12 – 14, 2019
<b>NATIONAL TSING HUA UNIVERSITY</b> <i>President's Scholarship with Monthly Financial Aid</i>	<b>HSINCHU, TAIWAN</b> Aug. 2015 – Aug. 2017
<b>NATIONAL KAOHSIUNG NORMAL UNIVERSITY</b> <i>Academic Excellence Award (2.56%)</i>	<b>KAOHSIUNG, TAIWAN</b> Jun. 2012

## PUBLICATIONS

---

### “Dynamical Instability in the Quantum Limit”

- [Wei-Xiang Feng](#), Hai-Bo Yu, Yi-Ming Zhong  
(in preparation)

### “Gravothermal Phase Transition, Black Holes and Space Dimensionality”

- [Wei-Xiang Feng](#) [Phys. Rev. D \*\*106\*\*, L041501 \(2022\)](#), [arXiv:2207.14317 \[gr-qc\]](#)

### “Self-interacting Dark Scalar Spikes around Black Holes via Relativistic Bondi Accretion”

- [Wei-Xiang Feng](#), Alessandra Parisi, Chian-Shu Chen, Feng-Li Lin  
[J. Cosmol. Astropart. Phys. \*\*08\*\* \(2022\) 032](#), [arXiv:2112.05160 \[astro-ph.HE\]](#)

**“On the Dynamical Instability of Monatomic Fluid Spheres in (N+1)-Dimensional Spacetime”**

- [Wei-Xiang Feng](#) *Astronomy* **2** (1), 22-46 (2023), [arXiv:2111.05341 \[gr-qc\]](#)

**“Dynamical Instability of Collapsed Dark Matter Halos”**

- [Wei-Xiang Feng](#), Hai-Bo Yu, Yi-Ming Zhong  
*J. Cosmol. Astropart. Phys.* **05** (2022) 036, [arXiv:2108.11967 \[astro-ph.CO\]](#)

**“Seeding Supermassive Black Holes with Self-interacting Dark Matter: A Unified Scenario with Baryons”**

- [Wei-Xiang Feng](#), Hai-Bo Yu, Yi-Ming Zhong  
*Astrophys. J. Lett.* **914**, L26 (2021), [arXiv:2010.15132 \[astro-ph.CO\]](#)

**“Signatures of wakefield acceleration in astrophysical jets via gamma-rays and UHECRs”**

- Gregory B. Huxtable, Noor Eltawil, [Wei-Xiang Feng](#), Wenhao Wang, Gabriel Player, Toshiki Tajima, Toshikazu Ebisuzaki  
*Mon. Not. R. Astron. Soc.* **522** (4), 5402-5414 (2023), [arXiv:2009.12333 \[astro-ph.HE\]](#)

**“The Buchdahl Stability Bound in Eddington-inspired Born-Infeld Gravity”**

- [Wei-Xiang Feng](#), Chao-Qiang Geng, Ling-Wei Luo  
*Chin. Phys. C* **43**, 083107 (2019), [arXiv:1810.06753 \[gr-qc\]](#)

**“Equation of State of Neutron Star with Junction Conditions in the Starobinsky Model”**

- [Wei-Xiang Feng](#), Chao-Qiang Geng, W. F. Kao, and Ling-Wei Luo  
*Int. J. Mod. Phys. D* **26**, 1750186 (2017), [arXiv:1702.05936 \[gr-qc\]](#)

**CONFERENCE PRESENTATIONS**

**SoCal Grad Strings & Fields 2023**

Mar. 24 – Mar.25, 2023

-*University of California, Los Angeles, CALIFORNIA, USA*

- “Supermassive Black Holes, Dark Matter, and the Relativistic Instability” – (Mar. 25, 2023)

**Theoretical Advanced Study Institute in Particle Theory (TASI) 2022**

Jun. 06 – Jul.01, 2022

-*University of Colorado, Boulder, COLORADO, USA*

- “Seeding Supermassive Black Holes with Self-interacting Dark Matter” – (Jun. 13, 2022)

**31<sup>st</sup> Midwest Relativity Meeting (hybrid format)**

Nov. 11 – 13, 2021

-*University of Illinois, Urbana-Champaign, ILLINOIS, USA*

- “Dynamical instability and the Space Dimensionality” – (Nov. 13, 2021)

**COSMOS’21 (online format)**

Aug. 2 – 6, 2021

-*University of Illinois, Urbana-Champaign, ILLINOIS, USA*

- “Seeding Supermassive Black Holes: A Unified Scenario with Baryons” – (Aug. 3, 2021)

**NCTS Dark Physics Workshop**

Jan. 9 – 11, 2020

-*National Center for Theoretical Sciences, HSINCHU, TAIWAN*

- “Seeding Supermassive Black Holes” – (Jan. 9, 2020)

**NCTS annual theory meeting 2019: particle, cosmology and strings**

Dec. 12 – 14, 2019

-*National Center for Theoretical Sciences, HSINCHU, TAIWAN*

- “SIDM and the Early Formation of SMBH” – (Dec. 13, 2019)

**The 5th International Workshop on Dark Matter, Dark Energy and Matter-antimatter Asymmetry**

Dec. 28, 2018

- *National Center for Theoretical Sciences, HSINCHU, TAIWAN*

- *Fo-Guang-Shan, KAOHSIUNG, TAIWAN*

Dec. 29 – 31, 2018

**NCTS annual theory meeting 2018: particle, cosmology and strings**

Dec. 17 – 20, 2018

-*National Center for Theoretical Sciences, HSINCHU, TAIWAN*

- “Buchdahl’s stability bound in EiBI gravity” – (Dec. 18 & 30, 2018)

## Math Connections 2018

-University of California, Riverside, CALIFORNIA, USA

May 19, 2018

- “On the existence of Buchdahl’s stability bound in EiBI gravity”

## Workshop on Dark Physics of the Universe

-National Center for Theoretical Sciences, HSINCHU, TAIWAN

Dec. 19 – 20, 2015

- “Equation of State of Neutron Stars  
with Junction Condition Approach in the  $R^2$  Model” – (Dec. 20, 2015)

## 7<sup>th</sup> Joint NCTS/FGCPA-LeCosPA Meeting on Dark Energy

-National Center for Theoretical Sciences, HSINCHU, TAIWAN

& Leung Center for Cosmology and Particle Astrophysics

- “Modified Gravity on Neutron Star: Numerical Study”

May 28, 2014

## INVITED TALKS & ACADEMIC ACTIVITIES

---

<b>Tsinghua University (online)</b>	<b>BEIJING, CHINA</b>
• Supermassive Black Holes, Dark Matter, and the Relativistic Instability	Feb. 23, 2023
<b>National Tsing Hua University</b>	<b>HSINCHU, TAIWAN</b>
• Gravothermal phase transition, black holes and space dimensionality	Sept. 29, 2022
<b>University of California, Riverside</b>	<b>CALIFORNIA, USA</b>
• <a href="#">UCR Internal Particle Theory Seminars – “Supermassive Black Holes”</a>	Feb. 17, 2021
<b>Institute of Physics, Academia Sinica</b>	<b>TAIPEI, TAIWAN</b>
• Visiting student scholar at IoP, AS	Nov. 2, 2020 – Jun. 28, 2021
• Journal Club – “Why 3+1? From the viewpoint of dynamical instability”	Mar. 17, 2021
• Seminar Talk – “Supermassive Black Holes - Direct Collapse Scenario from SIDM”	Oct. 16, 2020
<b>National Taiwan Normal University</b>	<b>TAIPEI, TAIWAN</b>
• Seminar Talk – “Why 3+1? From the viewpoint of dynamical instability”	Dec. 22, 2020
• Seminar Talk – “Supermassive Black Holes - Direct Collapse Scenario from SIDM”	Aug. 31, 2020
<b>National Center for Theoretical Sciences</b>	<b>HSINCHU, TAIWAN</b>
• Visiting student scholar at NCTS	Sept. 30 – Oct. 2, 2019
• Visiting student scholar at NCTS	Aug. 20 – 31, 2018
• Seminar Talk - “On the Existence of Buchdahl’s Stability in EiBI Gravity”	Aug. 29, 2018
<b>National Chiao Tung University</b>	<b>HSINCHU, TAIWAN</b>
• <a href="#">Participant in NCTU-Yau Journal Club: Interplay of Physics and Geometry</a>	Oct. 2016 – Jun. 2017
<b>National Tsing Hua University</b>	<b>HSINCHU, TAIWAN</b>
• Coordinator of NTHU General Relativity Study Group	Mar. 2016 – Jun. 2016
• Participant in NTHU Quantum Field Theory Study Group	Feb. 2016 – Jun. 2016

## WORK EXPERIENCE

---

<b>UNIVERSITY of CALIFORNIA, RIVERSIDE</b>	<b>CALIFORNIA, USA</b>
<i>Teaching Assistant &amp; Research Assistant</i> – Department of Physics & Astronomy	Oct. 2017 – present
<b>NATIONAL TSING HUA UNIVERSITY</b>	<b>HSINCHU, TAIWAN</b>
<i>Research Assistant – Department of Physics</i> Supervisor: Chao-Qiang Geng	Aug. 2015 – Aug. 2017

ENVIRONMENTAL PROTECTION BUREAU KAOHSIUNG CITY GOVERNMENT  
*Alternative Military Service*  
NATIONAL TSING HUA UNIVERSITY  
*Teaching Assistant of Classical Mechanics*  
*Teaching Assistant of Classical Electrodynamics*  
Lecturer: Dean-Yi Chou

KAOHSIUNG, TAIWAN  
Aug. 2014 – Jul. 2015  
HSINCHU, TAIWAN  
Sept. 2015 – Jan. 2016  
Sept. 2013 – Jun. 2014  
& Feb. 2017 – Jun. 2017

NATIONAL KAOHSIUNG NORMAL UNIVERSITY  
*Teaching Assistant of Modern Physics*  
Lecturer: Rung-Sheng Guo

KAOHSIUNG, TAIWAN  
Sept. 2011 – Jun. 2012

### Special Experiences

---

**NTHU's INTERNATIONAL VOLUNTEER GROUP – MALAYSIA**  
*Cultural preservation and Community building*  
*Media communications & Shooting Documentary*  
Documentary –  
**“Black Gold – How Charcoal is Made”**

HSINCHU, TAIWAN  
Jan. 2017 – Jun. 2017  
KUALA SEPETANG, MALAYSIA  
Jul. 2017 – Aug. 2017

### SKILLS

---

#### Programming Skills:

Python, Fortran, Gnuplot and Mathematica; LaTeX; Adobe Illustrator, Photoshop

### REFEREES

---

**Prof. Hai-Bo Yu:** haiboyu@ucr.edu

- Department of Physics and Astronomy, University of California, Riverside, USA

**Prof. Simeon Bird:** sbird@ucr.edu

- Department of Physics and Astronomy, University of California, Riverside, USA

**Prof. Kin-Wang Ng:** nkw@phys.sinica.edu.tw

- Institute of Physics, Academia Sinica, Taipei, Taiwan

**Prof. Chao-Qiang Geng:** geng@phys.nthu.edu.tw

- Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

**Prof. Lawrence Ford:** ford@cosmos.phy.tufts.edu

- Department of Physics and Astronomy, Tufts University, Boston, USA

**Prof. Hsiu-Hau Lin:** hsiuhau.lin@phys.nthu.edu.tw

- Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

**Prof. Dean-Yi Chou:** chou@phys.nthu.edu.tw

- Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

**Prof. Rung-Sheng Guo:** t1953@nknuc.nknu.edu.tw

- Department of Physics, National Kaohsiung Normal University, Kaohsiung, Taiwan