

# Dong-Gang Wang

PhD candidate at *Leiden Observatory* and *Lorentz Institute of Theoretical Physics*,  
Leiden University, The Netherlands

## Personal Information

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Homepage: [home.strw.leidenuniv.nl/~wdgang](http://home.strw.leidenuniv.nl/~wdgang) Nationality: Chinese Gender: Male

## Education Experience

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Sept. 2016	<i>PhD candidate at Leiden Observatory and Lorentz Institute of Theoretical Physics</i>
Present	as a <a href="#">de Sitter PhD Fellow</a> of Leiden University, The Netherlands Major: Theoretical Cosmology   Supervisor: <a href="#">Prof. Ana Achúcarro</a>
Jun. 2016	<i>Master, Department of Astronomy, University of Science and Technology of China (USTC)</i> Major: Theoretical Cosmology   Supervisor: <a href="#">Prof. Yi-Fu Cai</a> & Prof. Yang Zhang
Jun. 2013	<i>Bachelor, China University of Petroleum, Beijing</i>

## Research Interests

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I am interested in exploring **new physics in the primordial Universe**, particularly including:

- Inflationary Cosmology: model-independent signatures of new physics; effective theories; curved field space; UV implications;
- Phenomenology of primordial non-Gaussianity, primordial features and anomalies, primordial black holes (PBHs), gravitational waves (GWs) from the early Universe
- Cosmological observations related to GWs, CMB, PBHs and large scale structure (LSS) surveys

## Summary of publications and Impacts

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16 papers published or under review in refereed journals. Statistics (from [INSPIRE HEP](#)):

- Total citations: 307, h-index: 11, i10 index: 12 (updated on December 11, 2019)

## Selected Awards and Honors

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2016-2020	<a href="#">de Sitter Cosmology PhD Fellowship</a>
June. 2016	2016 Outstanding Graduate of USTC
Oct. 2015	Kwang-Hua Scholarship
Oct. 2014	National Scholarship for Graduate Students of China (Top 5%)
May. 2012	Mathematical Contest in Modeling (MCM2012): Meritorious Winner

## Services

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- Referee for *Physical Review D*, *European Physical Journal C*, *Universe*, *Chinese Physics C*, *IJGMP*
- Co-organizer of de Sitter Journal Club – a joint cosmology biweek meeting of Lorentz Institute and Leiden Observatory, Sept. 2018 – present
- Conference organization (as student assistant):  
In the management committee of 2016 Cfa@USTC Junior Symposium on Gravitation and Cosmology

## Conference and Seminar Talks

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Dec. 2019	<i>"Excursion in the curved field space of inflation"</i> , Texas 2019 Conference, Portsmouth, UK
Dec. 2019	<i>"Observational signatures of the inflationary curved field space"</i> , Invited Seminar, Groningen, Netherlands
Sept. 2019	<i>"Origin of ultra-light fields during inflation and their suppressed non-Gaussianity"</i> , Conference "Cosmo19" (Poster), Aachen, Germany
July. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Conference "Beyond GR, Beyond Cosmological Standard Model", Warsaw University
June. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Invited Seminar, ICC, Barcelona University, Spain
June. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Invited talk at Gordon Research Seminar on "String theory and cosmology", Spain
June. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Workshop on "Inflation and Geometry", IAP, Paris, France
April. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Cosmology Journal Club, DAMTP, Cambridge, UK
April. 2019	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Dutch Theoretical Cosmology Meeting, Leiden, NL
Jan. 2019	<i>"Excursion in hyperbolic space during inflation"</i> , APCTP workshop "New perspectives on cosmology", Pohang, South Korea
Jan. 2019	<i>"Excursion in hyperbolic space during inflation"</i> , Hong Kong IAS workshop "Black Holes, Inflation and Gravitational Waves", HKUST
Dec. 2018	<i>"Shift-symmetric orbital inflation: single field or multi-field?"</i> , Invited seminar, University of Science and Technology of China, Hefei
Dec. 2018	<i>"Excursion in hyperbolic space during inflation"</i> , Invited seminar, Beijing Normal University, Beijing
Dec. 2018	<i>"Excursion in hyperbolic space during inflation"</i> , Invited seminar, Warsaw University, Poland
Oct. 2018	<i>"Cosmic Microwave Background and Primordial Universe"</i> , Invited seminar, Dagstuhl Workshop "Visualization and Processing of Anisotropy"
Jan. 2018	<i>"Hyperbolic space, <math>\alpha</math>-attractors and multi-field inflation"</i> , Invited seminar, University of Science and Technology of China, Hefei
Mar. 2017	<i>"Primordial perturbations in matter bounce cosmology"</i> , Invited seminar, Albert-Einstein-Institute, Potsdam, Germany
May. 2016	<i>"The <math>\Lambda</math>CDM bounce scenario"</i> , Mini-Workshop on the frontier of cosmology at CCNU, Wuhan, China

## Postgraduate Schools/Academic Visits/Conferences attended

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Sept. 2019	The non-Gaussian workshop, DAMTP, Cambridge, UK
July. 2019	Research visit, Warsaw University, Warsaw, Poland
May. 2019	Research Visit to DAMTP, Cambridge University, UK
Mar. 2019	Research stay in DESY theory group, Hamburg, Germany
Feb. 2019	4th Joint Dutch-Brazil School on Theoretical Physics, ICTP, Sao Paulo, Brazil with presentation <i>"Shift-symmetric orbital inflation: single field or multi-field?"</i>
Dec. 2018	Research visit, Warsaw University, Warsaw, Poland
Oct. 2018	Workshop: Cosmic Topological Defects, Lorentz Center, Leiden, The Netherlands
May. 2018	Conference: Fundamental physics and cosmology, Solvay institute, Brussels, Belgium
Aug. 2017	Conference: COSMO17, Paris, France
July. 2017	Advances in Theoretical Cosmology in Light of Data, Nordita, Stockholm, Sweden
Jun. 2017	Workshop: Theoretical approaches to cosmic acceleration, Lorentz Center, Leiden
Feb. 2017	DRSTP postgraduate school 2017, Dalfsen, The Netherlands, with presentation <i>"Primordial perturbations in matter bounce cosmology"</i>
Dec. 2016	the 10th TRR33 Winter School on Cosmology, Tonale, Italy, with poster <i>"Features from the non-attractor beginning of inflation"</i>

## Publication List

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16. Dong-Gang Wang, *On the inflationary massive field with a curved field manifold*, [arXiv: 1911.04459](#).
15. Ana Achúcarro, Gonzalo Palma, Dong-Gang Wang, Yvette Welling, *Origin of ultra-light fields during inflation and their suppressed non-Gaussianity*, [arXiv: 1908.06956](#).
14. Yi-Fu Cai, Chao Chen, Xi Tong, Dong-Gang Wang, Sheng-Feng Yan, *When Primordial Black Holes from Sound Speed Resonance Meet a Stochastic Background of Gravitational Waves*, *Phys. Rev. D* **100**, 043518.
13. Ana Achúcarro, Ed Copeland, Oksana Iarygina, Gonzalo Palma, Dong-Gang Wang, Yvette Welling, *Shift-symmetric orbital inflation: single field or multi-field?*, [arXiv:1901.03657](#). [\(with 14 citations\)](#)
12. Oksana Iarygina, Evangelos I. Sfakianakis, Dong-Gang Wang, Ana Achúcarro, *Universality and scaling in multi-field  $\alpha$ -attractor preheating*, *JCAP* **1906** (2019) no.06, 027.
11. Yi-Fu Cai, Xi Tong, Dong-Gang Wang, Sheng-Feng Yan, *Primordial black holes from sound speed resonance during inflation*, *Phys.Rev.Lett.* **121** (2018) no.8, 081306. [\(with 20 citations\)](#)
10. Andrei Linde, Dong-Gang Wang, Yvette Welling, Yusuke Yamada, Ana Achúcarro, *Hypernatural Inflation*, *JCAP* **1807** (2018) no.07, 035.
9. Yi-Fu Cai, Xingang Chen, Mohammed Hossein Namjoo, Misao Sasaki, Dong-Gang Wang, Ziwei Wang, *Revisiting non-Gaussianity from non-attractor inflation models*, *JCAP* **1805** (2018) no.05, 012. [\(23 citations\)](#)
8. Ana Achúcarro, Renata Kallosh, Andrei Linde, Dong-Gang Wang, Yvette Welling, *Universality of multi-field alpha-attractors*, *JCAP* **1804** (2018) no.04, 028. [\(with 43 citations\)](#)
7. Yu-Bin Li, Jerome Quintin, Dong-Gang Wang and Yi-Fu Cai, *Matter bounce cosmology with a generalized single field: non-Gaussianity and an extended no-go theorem*, *JCAP* **03** (2017) 013.
6. Yi-Fu Cai, Antonino Marciano, Dong-Gang Wang and Edward Wilson-Ewing, *Bouncing cosmologies with dark matter and dark energy*, *Universe* **3**, no. 1, 1 (2017), [arXiv:1610.00938](#). [\(with 38 citations\)](#)
5. Yi-Fu Cai, Jinn-Ouk Gong, Dong-Gang Wang and Ziwei Wang, *Features from the non-attractor beginning of inflation*, *JCAP* **10** (2016) 017, [arXiv:1607.07872](#).
4. Fa Peng Huang, Youping Wan, Dong-Gang Wang, Yi-Fu Cai and Xinmin Zhang, *Hearing the echoes of electroweak baryogenesis with gravitational wave detectors*, *Phys. Rev. D Rapid Communications* **94**, 041702(R) (2016), [arXiv:1601.01640](#). [\(with 58 citations\)](#)
3. Yi-Fu Cai, Francis Duplessis, Damien Easson and Dong-Gang Wang, *Search for a matter bounce cosmology with low redshift observations*, *Phys. Rev. D* **93**, 043546 (2016), [arXiv:1512.08979](#).
2. Dong-Gang Wang, Yang Zhang and J. Chen, *Vacuum and Gravitons of Relic Gravitational Waves, and Regularization of Spectrum and Energy-Momentum Tensor*, *Phys. Rev. D* **94**, 044033 (2016), [arXiv:1512.03134](#).
1. Dong-Gang Wang, Yi-Fu Cai, W. Zhao and Y. Zhang, *Scale-dependent CMB power asymmetry from primordial speed of sound and a generalized  $\delta N$  formalism*, *JCAP* **1602**, 019(2016), [arXiv:1509.02541](#).

## Teaching Experience

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2018 Fall	Teaching Assistant of <i>Astronomical Relativity</i> with <a href="#">Prof. van der Werf</a> , Leiden
2017 Fall	Teaching Assistant of <i>Astronomical Relativity</i> with <a href="#">Prof. van der Werf</a> , Leiden
2016 Fall	Teaching Assistant of <i>Introduction General Relativity</i> with <a href="#">Prof. van der Werf</a> , Leiden
2015 Fall	Teaching Assistant of <i>Theoretical Mechanics</i> with <a href="#">Prof. Ye-Fei Yuan</a> , USTC
2015 Spring	Teaching Assistant of <i>Fundamental Physics II</i> with <a href="#">Prof. Guo-Zhu Liu</a> , USTC

## Extracurricular Activities

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- Popular science articles (in Chinese):
  - *Universe the Broken: the ultimate mystery in the Mexican hat*, Wechat “Mr. Science”, Oct. 2019
  - *String theory, swampland and our Universe*, Wechat special column “Mr. Science”, Aug. 2018.
  - *A challenge to the dark matter theory?*, Wechat special column “The Intellectual”, Jan. 2018.
  - *Where do we come from? – mumbling the Big Bang*, Wechat “Mr. Science”, Apr. 2017.

- *Ripples of Spacetime and One Hundred Years of Waiting*, China Education Daily, Feb. 2016.
- Public Talk: *The story of our Universe*, USTC Alumni Association in Netherlands, Oct. 2019.
- Board member of *Leiden Science China Community*, 2017 – Present

## References

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| Prof. Ana Achúcarro | - Lorentz Institute of Theoretical Physics, Leiden University, Netherlands<br>email: <a href="mailto:achucar@lorentz.leidenuniv.nl">achucar@lorentz.leidenuniv.nl</a> |
| Prof. Yi-Fu Cai     | - Department of Astronomy, University of Science and Technology of China<br>email: <a href="mailto:yifucai@ustc.edu.cn">yifucai@ustc.edu.cn</a>                       |
| Prof. Xingang Chen  | - Harvard-Smithsonian Center for Astrophysics, Harvard University, USA<br>email: <a href="mailto:xingang.chen@cfa.harvard.edu">xingang.chen@cfa.harvard.edu</a>       |
| Prof. Andrei Linde  | - Stanford Institute for Theoretical Physics, Stanford University, USA<br>email: <a href="mailto:alinde@stanford.edu">alinde@stanford.edu</a>                         |