

# Changkai Zhang

## Curriculum Vitae

### Education History

- 2016 – **Bachelor of Science**, *The University of Manchester*, Manchester.  
present Specialized in Physics. Grading – First Class Honours.
- 2015 – **Bachelor of Science**, *Beijing Normal University*, Beijing.  
present Specialized in Physics.
- 2014 – 2015 **Bachelor of Science**, *Beijing Normal University*, Beijing.  
Specialized in Computer Science.

### BSc Dissertation

- Title **On the AdS/CFT Correspondence**
- Supervisor Professor Niels Walet
- Description This is a brief review of the AdS/CFT correspondence, including the original derivation and a modern implication of the AdS/CFT correspondence with a revealing introduction of the concepts used. Also presented are checks of this correspondence and how it can be applied in areas like computing the entanglement entropy.

### Publications

- 2018 **Changkai Zhang**, Quadratic Lagrangian and Spin-statistics Connection (preprint), 2018, DOI: 10.13140/RG.2.2.28302.87367
- 2017 **Changkai Zhang**, On the AdS/CFT Correspondence (BSc dissertation), 2017, DOI: 10.13140/RG.2.2.26359.93603
- 2016 **Changkai Zhang**, Structure of Physics, 2016, DOI: 10.13140/RG.2.1.1013.8004
- 2015 **Changkai Zhang**, Constructive Physics, 2015, DOI: 10.13140/RG.2.1.1403.2881

### Research Experience

- 2016 – 2017 **Path Integral Quantization of Fields.**  
One-year undergraduate research training program. Leader of a team of 3 members.  
Document is hosted by Readthedocs, accessible via [path-integral-project.rtfld.io](http://path-integral-project.rtfld.io)
- 2014 – 2015 **Taiwan College-student Physics Tournament.**  
Leader of the Beijing Normal University team, achieved 6 wins in total 7 rounds.  
Topics come from 28th IYPT: [iypt.org/images/8/87/problems2015.pdf](http://iypt.org/images/8/87/problems2015.pdf)

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## Independent Study

2016 – 2018 **Structure of Physics.**

The methodology and the construction of the fundamental theory of Physics. It is shown how to derive a physical theory based solely on mathematical requirements on self-consistency.

2015 – 2018 **Constructive Physics.**

An attempt to construct physical theories in a logically self-contained formulation. It serves as a reference of the mathematical structure of the classical gauge field theory.

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## Computer Skills

Language C/C++, Python, Haskell, Mathematica,  $\text{\LaTeX}$

Utilities Linux & CLI tools, Vector Graphics e.g. Illustrator & Gravit Designer

Algorithm Machine Learning, Deep Learning

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## Languages

Chinese First language, simplified & traditional

English Second language, oral & written, daily & academic

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## Interests & Hobbies

Aviation All sorts of model aircraft, including fixed-wing aircraft, helicopters and rockets. Also interested in commercial flight safety.

Network A web server hosted by a Raspberry Pi and several cloud computing instances running various web services.

Music & Art Chinese traditional-style music & traditional instruments. Graphic design and web front-end interface design.

PKM System Personal Knowledge Management, the methodology of managing computerized knowledge and creating efficient human-computer interaction.

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