



# Junhao Ke

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Faculty of Engineering and Information Technology  
The University of Sydney  
New South Wales 2006

## Education

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**The University of Sydney**

NSW, Australia

Doctor of Philosophy

March 2017 – January 2021

Advisors: Dr. Nicholas Williamson & Prof. Steven Armfield

**The University of Sydney**

NSW, Australia

Master of Professional Engineering

March 2015 – December 2016

Advisors: Dr. Nicholas Williamson & Prof. Steven Armfield

**East China University of Science and Technology**

Shanghai, China

Bachelor of Engineering

September 2010 – July 2014

## Research Interests

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Buoyant Driven Flows, Heat Transfer, Computational Fluid Dynamics, Statistical Computing,  
Turbulence, Boundary Layer Theory

## Publications

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**Ke, J.**, Williamson, N., Armfield, S. W., Norris, S. E., & Komiya, A. (2020). Law of the wall for a temporally evolving vertical natural convection boundary layer. *Journal of Fluid Mechanics*, 902, A31.

**Ke, J.**, Williamson, N., Armfield, S. W., McBain, G. D., & Norris, S. E. (2019). Stability of a temporally evolving natural convection boundary layer on an isothermal wall. *Journal of Fluid Mechanics*, 877, 1163-1185.

**Ke, J.**, Williamson, N., Armfield, S. W., Norris, S. E., & Kirkpatrick, M. (2018). Direct numerical simulation of a temporally developing natural convection boundary layer on a doubly-infinite isothermal wall, *In Proceedings of IHTC-16. Begell House*.

## Work in Progress

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**Ke, J.**, Williamson, N., Armfield, S. W., Norris, S. E., & Komiya, A. High Grashof number turbulent natural convection on an infinite vertical wall. (Submitted to *Journal of Fluid Mechanics*)

## Conferences & Talks

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Direct numerical simulation of an unsteady natural convection boundary layer adjacent to a doubly-infinite isothermal wall. In 10th Australasian Natural Convection Workshop, Auckland, New Zealand, 30 November-1 December 2017.

Direct numerical simulation of a temporally developing natural convection boundary layer on a doubly-infinite isothermal wall. In 16th International Heat Transfer Conference, Beijing, China, 10-15 August 2018.

DNS study of a parallel vertical natural convection boundary layer. In Australia-Japan Fluid Dynamics Workshop, Sydney, NSW Australia, 31 January-1 February 2019.

DNS of a temporally evolving vertical natural convection boundary layer. In 17th European Turbulence Conference, Torino, Italy, 3-6 September 2019.

Application of an integral model to an unsteady natural convection boundary layer. In 11th Australasian Natural Convection Workshop, Sydney, NSW Australia, 9-10 December 2019.

Integral modelling of an unsteady natural convection boundary layer. In 22nd Australasian Fluid Mechanics Conference, Brisbane, QLD Australia, 7-10 December 2020.

## Honors & Awards

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<b>Postgraduate Research Support Scheme</b> , Faculty of Engineering and IT, USyd	<i>2018, 2020, 2021</i>
<b>Charles Kolling Travelling Fund</b> , Faculty of Engineering and IT, USyd	<i>2019</i>
<b>Best Student Paper Award</b> in 10th Australasian Natural Convection Workshop	<i>2017</i>
<b>Natural Convection Supplementary Scholarship</b> , Faculty of Engineering and IT, USyd	<i>2016</i>
<b>USyd-IS Strategic Scholarship Award</b> , USyd	<i>2016</i>
<b>Dean's Excellency Award</b> , Faculty of Engineering and IT, USyd	<i>2015</i>
<b>Merit Academic Award</b> , Faculty of Engineering and IT, USyd	<i>2015</i>
<b>Third Prize Scholarship</b> , East China University of Science and Technology	<i>2014</i>
<b>Fei-yang Award</b> , East China University of Science and Technology	<i>2014</i>

## Teaching Experience

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<b>Teaching Assistant</b>	<i>March 2017 – Present</i>
Faculty of Engineering and IT, USyd	NSW
<ul style="list-style-type: none"><li>Deliver tutorial and lead discussion sessions to reinforce material covered in lectures. Supervise quizzes and evaluate student assignments, quizzes, exams, and other assessments. Course includes: Fluid Dynamics II (MECH3261), Thermal Engineering II (MECH3260), Advanced Computational Fluid Dynamics (AMME5202)</li></ul>	

## Research Experience

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<b>Research Associate</b>	<i>March 2021 – Present</i>
School of Aerospace, Mechanical and Mechatronic Engineering, The University of Sydney	NSW, Australia
<ul style="list-style-type: none"><li>Focus on the flow physics of the highly turbulent natural convection flows</li></ul>	
<b>Visiting Researcher</b>	<i>September 2019 – October 2019</i>
Advanced Fluid Information Research Center, Institute of Fluid Science, Tohoku University	Sendai, Japan
<ul style="list-style-type: none"><li>International cooperation on the natural convection/ventilation project</li></ul>	

## Industry Experience

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<b>Project Engineer</b>	<i>November 2015 – February 2016</i>
Department of Research & Development, Inalfa Co., Ltd.	Shanghai, China
<ul style="list-style-type: none"><li>Experiment design &amp; validation</li><li>Statistical analysis for experimental data</li><li>Algorithm development for acoustic analysis programs</li></ul>	
<b>Assistant Manager</b>	<i>June 2014 – December 2014</i>
Department of Construction & Excavation Machinery, Yanmar Engines Co.,	Shanghai, China
<ul style="list-style-type: none"><li>Statistical analysis for recurrent event data</li><li>Inventory control</li></ul>	

## Service

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<b>Volunteer</b> of China Open Day (USyd)	<i>2015</i>
<ul style="list-style-type: none"><li>Providing assistance on behalf of the faculty of Engineering and IT with the USyd global student recruitment team.</li></ul>	

## Language

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<b>English</b> (fluent), <b>Japanese</b> (fluent), <b>Mandarin</b> (native) and <b>Shanghai Dialect</b> (native)
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