

Doctoral Thesis

**Thesis Title**

**Thesis Title**

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| *Author:*  Shey Liu | *Supervisor:*  Prof. Shey Liu |

*A thesis submitted in fulfillment of the requirements*

*for the degree of Doctor of Philosophy*

*in the*

Department of Mechanical Engineering

Faculty of Engineering

May 31, 2025

1. Abstract
2. of thesis entitled

**Thesis Title**

Submitted by

**Shey Liu**

for the degree of Doctor of Philosophy

at The University of Hong Kong

in May 2025

XXXXXXX

XXXXXXX

***An abstract of 500 words***

**Thesis Title**

by

Shey Liu

Master of XXX, XXX University

Bachelor of XXX, XXX University

*A thesis submitted to attain the degree of*

*Doctor of Philosophy*

at

The University of Hong Kong

May, 2025

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1. Declaration

I, Shey Liu, declare that this thesis titled, “Thesis Title”, which is submitted in fulfillment of the requirements for the Degree of Doctor of Philosophy, represents my own work except where due acknowledgement have been made. I further declared that it has not been previously included in a thesis, dissertation, or report submitted to this University or to any other institution for a degree, diploma or other qualifications.

1. Acknowledgement

I would like to thank all the people I love.

1. List of Publications

*Journals:*

1. **Liu, S.**, XXX. (2025). XXX. *XXX*,
2. **Liu, S.**,
3. **Liu, S.**,
4. **Liu, S.**,
5. **Liu, S.,** *Under Review*.
6. **Liu, S.**, *Under Review*.
7. **Liu, S.,** *In progress*.
8. Liu, S., *In progress*.
9. Liu, S., *In progress*.

*Conferences:*

1. **Liu, S.**, Co-author (2024). Conference paper. conference, *Hong Kong*.
2. **Liu, S.**, *Hong Kong*.
3. **Liu, S.**, *Japan*.
4. **Liu, S.**, *Australia*.
5. **Liu, S.**, *USA*.
6. **Liu, S.**, *Austria*.
7. **Liu, S.**, *Singapore*.
8. **Liu, S.**, *Korea*.

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1. List of Abbreviations

|  |  |
| --- | --- |
| FFT | Fast-Fourier Transform |
| LES | Large-eddy Simulation |
| TKE | Turbulence Kinetic Energy |

1. List of Symbols

|  |  |  |
| --- | --- | --- |
|  | Wavelet time scale | - |
|  | Scalar concentration | - |
|  | Eigen value | - |

*Subscripts:*

|  |  |
| --- | --- |
| ave | Spatial- / Time- averaged |

1. Introduction
   1. XXX

I

n the contemporary XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX.

* + 1. XXX
       1. XXX
    2. XXX

Figure 1.1 shows XXX.

图示

AI 生成的内容可能不正确。

Illustration of XXX ([Liu & Liu, 2025](#_ENREF_2)).

* 1. XXX

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       1. XXX
          1. XXX

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  1. XXX

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* 1. Thesis structure

This thesis is divided into three parts shown in : (a) xxx, (b), organized as follows:

*Chapter Two:* xxxxx

*Chapter Three:* xxx

1. Lterature Review

T

his chapter discusses the importance of XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX.

* 1. Introduction

Figure 2.1 ([Oke et al., 2017](#_ENREF_3)), represent XXX.

图示

AI 生成的内容可能不正确。

Time and length scale of phenomena in urban climate ([Oke et al., 2017](#_ENREF_3))

* 1. XXX

XXX.

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XXX (2.1)

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Where XXX.

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In Table 2.1 , XXX.

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* + 1. XXX

Figure 2.6 XXX.

图表, 图示

AI 生成的内容可能不正确。

XXX ([Schmidt, 2022](#_ENREF_4)).

The applications in Table 2.2, XXX.

Applications.

|  |  |  |  |
| --- | --- | --- | --- |
| **Author** | **Object** | **XXX** | **XXX** |
| [Immerzeel et al. (2005)](#_ENREF_1) | XXX | XXX | XXX |
| XXX | XXX | XXX | XXX |

* 1. Research gap and conclusion

The literature review XXX.

1. Methodology

T

his chapter XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

* 1. Model

The XXX Figure 3.1

徽标, 公司名称

AI 生成的内容可能不正确。

Scheme.

* 1. Numerical method
     1. Governing equations

The fields are calculated by the filtered continuity equation (3.1)

|  |  |  |
| --- | --- | --- |
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* 1. Experiment

XXX

1. Statistical Analysis

S

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* 1. Introduction

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xxx

* 1. Data treatment

A steady xxx (4.1):

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| --- | --- | --- |
|  |  |  |

* 1. Field
     1. XXX

XXX

* 1. Analysis
     1. Distribution

XXX

卡通人物

AI 生成的内容可能不正确。

The XXXXXX.

* 1. Hole analysis

To evaluate XXX.

* 1. Discussion

The XXX.

* 1. Concluding remarks

This chapter analyses

1. Conclusion

T

his study systematically investigated the influence of XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX. XXXXXXXXXXX XXXXXXXXXXX. XXXXXXXXXXX XXXXXXXXXXX.

* 1. XXX

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| **Methods** | **XXXXX ()** | | | |
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| **XXX** | / | / | / | / |

\*XXXXX

* 1. XXX

The implications XXX.

* 1. Limitations and prospects

While the study advanced XXX

1. Bibliography

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Schmidt, O. T. (2022). Spectral proper orthogonal decomposition using multitaper estimates. *Theoretical and Computational Fluid Dynamics*, *36*(5), 741-754. <https://doi.org/10.1007/s00162-022-00626-x>