

A thesis submitted for the degree of  
Master of Science

**Large Eddy Simulation of an Internal  
combustion engine incorporating a novel  
boundary layer modelling approach to  
evaluate piston-wall interactions**

Yannick Durindel  
Chair of Fluid Dynamics  
University of Duisburg-Essen  
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*Primary Supervisor:* M. Sc. Luiz Felipe Rico Cortez  
University of Duisburg-Essen

*Secondary Supervisor:* Prof. Dr.-Ing Kempf  
University of Duisburg-Essen

# Abstract

# Acknowledgment

# Contents

<b>List of Tables</b>	<b>ii</b>
<b>List of Figures</b>	<b>iii</b>
<b>List of Code</b>	<b>iv</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 State of the Art</b>	<b>2</b>
<b>A Appendix</b>	<b>3</b>
<b>B Appendix: Additonal Results</b>	<b>4</b>

# List of Tables

# List of Figures

# List of Code

# **1. Introduction**

## **2. State of the Art**

## A. Appendix

## B. Appendix: Additonal Results

**Declaration in lieu of an oath**

I hereby solemnly declare that I have independently completed this work or, in the case of group work, the part of the work that I have marked accordingly. I have not made use of the unauthorised assistance of third parties. Furthermore, I have used only the stated sources or aids and I have referenced all statements (particularly quotations) that I have adopted from the sources I have used verbatim or in essence.

I declare that the version of the work I have submitted in digital form is identical to the printed copies submitted.

I am aware that, in the case of an examination offence, the relevant assessment will be marked as 'insufficient' (5.0). In addition, an examination offence may be punishable as an administrative offence (Ordnungswidrigkeit) with a fine of up to €50,000. In cases of multiple or otherwise serious examination offences, I may also be removed from the register of students.

I am aware that the examiner and/or the Examination Board may use relevant software or other electronic aids in order to establish an examination offence has occurred.

I solemnly declare that I have made the previous statements to the best of my knowledge and belief and that these statements are true and I have not concealed anything.

I am aware of the potential punishments for a false declaration in lieu of oath and in particular of the penalties set out in Sections 156 and 161 of the German Criminal Code (Strafgesetzbuch; StGB), which I have been specifically referred to.

**Section 156 False declaration in lieu of an oath**

Whoever falsely makes a declaration in lieu of an oath before an authority which is competent to administer such declarations or falsely testifies whilst referring to such a declaration incurs a penalty of imprisonment for a term not exceeding three years or a fine.

**Section 161 Negligent false oath; negligent false declaration in lieu of oath**

(1) Whoever commits one of the offences referred to in Sections 154 to 156 by negligence incurs a penalty of imprisonment for a term not exceeding one year or a fine. (2) No penalty is incurred if the offender corrects the false statement in time. The provisions of Section 158 (2) and (3) apply accordingly.

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Place, date

Signature