#### This Dissertation

#### entitled

#### PLASMA FLOW CONTROL

#### FOR NOISE REDUCTION

#### ON AIRCRAFT LANDING GEAR

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# PLASMA FLOW CONTROL FOR NOISE REDUCTION ON AIRCRAFT LANDING GEAR

#### A Dissertation

Submitted to the Graduate School of the University of Notre Dame in Partial Fulfillment of the Requirements for the Degree of

Master of Science

in

Aerospace Engineering

by

Michael C. Wicks,

Flint O. Thomas, Director

, Director

Graduate Program in Aerospace and Mechanical Engineering

# Notre Dame, Indiana ${\rm June}\ 2015$

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# PLASMA FLOW CONTROL FOR NOISE REDUCTION ON AIRCRAFT LANDING GEAR

#### Abstract

by

#### Michael C. Wicks

Please note that the full LaTeX source code (and an associated Makefile) is available from the University of Notre Dame Graduate Student Union web site. The Information Technology Committee page<sup>1</sup> has all the necessary files in download-able form. This particular dissertation was developed under Unix, but is also be usable under Windows with the appropriate LaTeX setup and was modified on a Windows system in 2012-2013. It should also work with on Mac.

While the source code for this document provides an excellent example for how to use the NDdiss2 $\varepsilon$  Lagrange that a Notre Dame thesis, it is not a substitution for the documentation of the NDdiss2 $\varepsilon$  Lagrange that a VDdiss2 $\varepsilon$  Lagrange that the ND GSU web site).

In this thesis, I will tell all that I know about Gnus. Gnus are wonderful little creatures that inhabit the center of the earth and give us wonderful and plentiful trees, dirt, and other earthly-things.

In short, we should love and cherish the Gnus. They can be very friendly, and are often mistaken for squirrels on the University of Notre Dame campus. Feed

 $<sup>^1</sup>$ http://www.gsu.nd.edu/

them whenever possible. If they get caught in trash cans, tip them over so that they can get out.

This abstract is going to continue on, including a few formulas, just for the sake of spilling over on to two pages so that we can see the author's name in the top right corner:

$$a^{2} + b^{2} = c^{2}$$

$$E = mc^{2}$$

$$\frac{e}{m} = c^{2}$$

$$a^{2} + b^{2} = \frac{e}{m}$$

These equations, by themselves mean nothing. But to the common Gnu, they define a whole way of living. While intricate mathematical implications certainly do not infiltrate the majority of humans' lives, every Gnu, from birth, is imbued with a sense of mathematical certainty and guidance. All Gnus, great and small, feel at one with mathematics. The cute furry bit is just a scam for their calculating minds.

To Laurimar

# CONTENTS

FIGUR	ES		iv
TABLE	S		V
СНАРТ	TER 1:	INTRODUCTION	1
1.1	Motiv	ation	1
1.2	Theory of Aeroacoustics		1
1.3	Landing Gear		1
	1.3.1	Geometry	1
	1.3.2	Noise Sources	1
СНАРТ	TER 2:	Literature Review	2
2.1	Aerod	lynamics and Aeroacoustics	2
	2.1.1	Single Cylinder	2
	2.1.2	Tandem Cylinder	2
	2.1.3	Torque Arm	2
	2.1.4	Landing Gear	2
2.2	Noise Reduction		2
	2.2.1	Plasma Flow Control	2
	2.2.2	Single Cylinder	2
	2.2.3	Tandem Cylinder	2
	2.2.4	Torque Arm	2
СНАРТ	TER 3:	Prospectus	3
3.1	Preliminary Results		3
	3.1.1	Torque Arm	3
	3.1.2	Landing Gear	3
RIRLIC	CRAP	PHV	1

# FIGURES

# TABLES

# $CHAPTER\ 1$

## INTRODUCTION

- 1.1 Motivation
- 1.2 Theory of Aeroacoustics
- 1.3 Landing Gear
- 1.3.1 Geometry
- 1.3.2 Noise Sources

## CHAPTER 2

#### Literature Review

- 2.1 Aerodynamics and Aeroacoustics
- 2.1.1 Single Cylinder
- 2.1.2 Tandem Cylinder
- 2.1.3 Torque Arm
- 2.1.4 Landing Gear
- 2.2 Noise Reduction
- 2.2.1 Plasma Flow Control
- 2.2.2 Single Cylinder
- 2.2.3 Tandem Cylinder
- 2.2.4 Torque Arm

# CHAPTER 3

## Prospectus

- 3.1 Preliminary Results
- 3.1.1 Torque Arm
- 3.1.2 Landing Gear

## BIBLIOGRAPHY

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