#### MEMS tunable polarization rotator for optical communication

#### SANDIPAN DAS



Master's Degree Project in Micro and Nanosystems Second level, 30 HEC Stockholm, Sweden June 2016



#### MEMS tunable polarization rotator for optical communication

#### Sandipan Das

Stockholm, January 21, 2016

#### Abstract

Describe briefly about the system

#### **Contents**

1	Intro	oduction	1
	1.1	Motivation	1
	1.2	Objectives	1
	1.3	MEMS and silicon photonics	1
	1.4	Importance of these systems	1
	1.5	Outline of this thesis	1
2	State of the art		
	2.1	Optical waveguides	2
	2.2	Polarization in optical waveguides	2
	2.3	Polarization rotator	2
		2.3.1 Passive polarization rotator	2
		2.3.2 Active polarization rotator	2
3	Desi	ign and simulation	3
	3.1	Approach	3
	3.2	Choice of simulation	3
	3.3	Designing the experiment	3
		3.3.1 Use case: Passive polarization rotator	3
		3.3.2 Use case: Active polarization rotator	3
4	Fabi	rication	4
5	Results		
	5.1	Experimental setup for measurement	5
	5.2	Results	5
	5.3	Analysis	5
6	Con	clusions	6
7	Limi	itations and future work	7
8	Acknowledgments		
•	8.1	Sample	<b>8</b>
Bi	Bibliography		

### Introduction

- 1.1 Motivation
- 1.2 Objectives
- 1.3 MEMS and silicon photonics
- 1.4 Importance of these systems
- 1.5 Outline of this thesis

### 2 State of the art

- 2.1 Optical waveguides
- 2.2 Polarization in optical waveguides
- 2.3 Polarization rotator
- 2.3.1 Passive polarization rotator
- 2.3.2 Active polarization rotator

### 3 Design and simulation

- 3.1 Approach
- 3.2 Choice of simulation
- 3.3 Designing the experiment
- 3.3.1 Use case: Passive polarization rotator
- 3.3.2 Use case: Active polarization rotator

## Fabrication

## 5 Results

- 5.1 Experimental setup for measurement
- 5.2 Results
- 5.3 Analysis

## 6 Conclusions

# Chapter 7 Limitations and future work

### Acknowledgments

#### 8.1 Sample

Here I have cited the [1] and [2] just for fun.

#### **Bibliography**

- [1] Analog Systems, ""ADXL335 Datasheet. http://www.analog.com/media/en/technical-documentation/data-sheets/ADXL335.pdf," 2010.
- [2] D. Kiburz, R. Jacobs, F. Reckling, and J. Mason, "Bicycle accidents and injuries among adult cyclists," *The American journal of sports medicine*, vol. 14, no. 5, pp. 416–419, 1986.