

Suitable Impressive Thesis Title



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A thesis submitted for the degree of

Dr. rer. nat.

Acknowledgements

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Kurzfassung

Dies ist ein deutscher Abstrakt.

Abstract

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Contents

| | |
|---|------------|
| List of Symbols | iii |
| List of Abbreviations | v |
| List of Figures | vii |
| 1 Introduction | 1 |
| 1.1 Background and Motivation | 1 |
| 1.2 Literature Review | 2 |
| 2 Theory of ion beam sputtering | 3 |
| 2.1 Test section | 3 |

List of Symbols

| Symbol | Description | Unit |
|-----------|--------------|--------------------|
| a | acceleration | m s^{-2} |
| F | force | N |
| \dot{m} | mass-flow | kg s^{-1} |
| x | position | m |

List of Abbreviations

| Abbr. | Description |
|--------------|---|
| AIREBO | Adaptive intermolecular reactive bond order |
| CEX | Charge exchange |
| CP | Chemical propulsion |

List of Figures

| | | |
|-----|--|---|
| 1.1 | Schematic of an electrostatic propulsion device. | 2 |
|-----|--|---|

Starting from Day 0 became my friend.

— D. Goggins

1

Introduction

Contents

| | |
|--|----------|
| 1.1 Background and Motivation | 1 |
| 1.2 Literature Review | 2 |

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$$T = \dot{m}u_e \tag{1.1}$$

A schematic of the working principle of an electrostatic thruster is illustrated in Figure 1.1.

1.1 Background and Motivation

The lifetime of most EP devices is limited by erosion becoming so severe, that the accelerating mechanism does not work properly anymore.

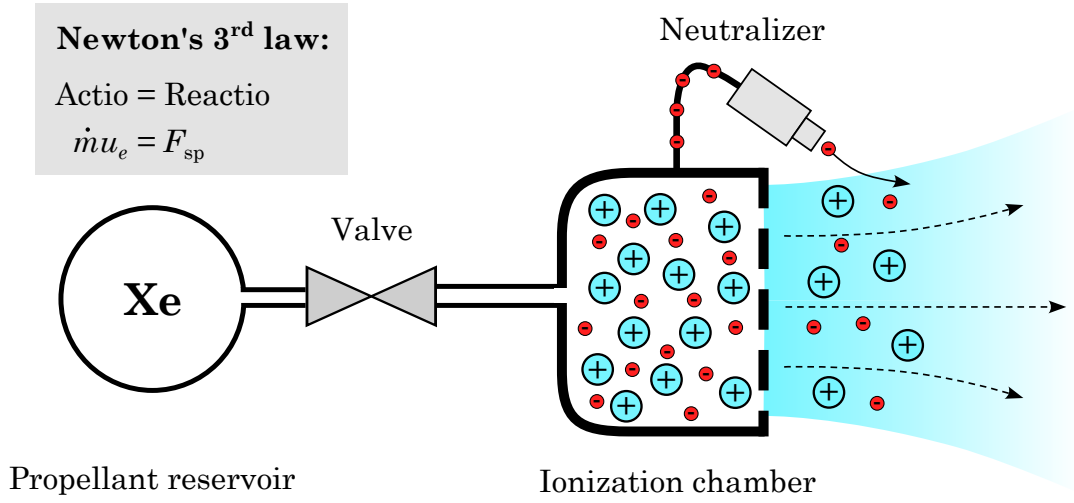


Figure 1.1: Schematic of an electrostatic propulsion device.

1.2 Literature Review

Because there is limited literature available on MD simulations of EP plasma sputtering according to Jackson *et al.* [1], this literature review includes publications from various fields where similar analyses were conducted [2].

Keep your eyes on the stars, but remember to keep your feet on the ground.

— T. Roosevelt

2

Theory of ion beam sputtering

Contents

| | |
|-----------------------------------|----------|
| 2.1 Test section | 3 |
|-----------------------------------|----------|

Surfaces subjected to ion irradiation undergo a cascade of energetic displacement on the atomic scale.

2.1 Test section

Bibliography

- [1] **J. Jackson, S. Miller, J. Cassady, E. Soendker, B. Welanders, M. Barber, and P. Y. Peterson**, “13kw advanced electric propulsion flight system development and qualification,” The 36th International Electric Propulsion Conference, Electric Rocket Propulsion Society, 2019.
- [2] **B. Harvey**, “The legacy,” *Russian Planetary Exploration: History, Development, Legacy, Prospects*, pp. 325–331, 2007.