

Dissertation

**Numerical study of the crack path selection
problem based on the variational fracture theory**
変分型破壊理論に基づく亀裂経路選択問題の数値的研究

Graduate School of Natural
Sciences and Technology,
Kanazawa University

Division of Mathematical and
Physical Sciences

1924012007

Name: Alifian Mahardhika Maulana

Chief advisor: Professor Masato Kimura

June 2022

KANAZAWA UNIVERSITY

Abstract

Graduate School of Natural Sciences and Technology
Division of Mathematical and Physical Sciences

Doctor of Science

**Numerical study of the crack path selection problem based on the
variational fracture theory**

by Alifian Mahardhika Maulana

Citation [1] *keyword:*

Acknowledgements

I would like to thank

Contents

| | |
|---------------------|------|
| Abstract | i |
| Acknowledgements | ii |
| Contents | iii |
| List of Figures | iv |
| List of Tables | v |
| Abbreviations | vi |
| Physical Constants | vii |
| Symbols | viii |
| | |
| 1 Introduction | 1 |
| 2 Basic Theory | 2 |
| 3 Method | 3 |
| 4 Numerical Example | 4 |
| 5 Conclusion | 5 |
| | |
| A Notation | 6 |
| B Numerical code | 7 |
| | |
| References | 8 |

List of Figures

List of Tables

Abbreviations

LAH List Abbreviations **Here**

Physical Constants

$$\text{Speed of Light } c = 2.997\,924\,58 \times 10^8 \text{ ms}^{-\text{s}} \text{ (exact)}$$

Symbols

| | | |
|----------|-------------------|------------------------|
| a | distance | m |
| P | power | W (Js^{-1}) |
| ω | angular frequency | rads^{-1} |

For/Dedicated to/To my...

Chapter 1

Introduction

Chapter 2

Basic Theory

Chapter 3

Method

Chapter 4

Numerical Example

Chapter 5

Conclusion

Appendix A

Notation

Appendix B

Numerical code

References

- [1] Tetsuhiko Miyoshi. Direction and curvature of the cracks in two-dimensional elastic body. *Japan Journal of Industrial and Applied Mathematics*, 17(2):295–307, June 2000. ISSN 0916-7005, 1868-937X.