

TABLE OF CONTENTS

Licensing

1: Introduction

- 1.1: Introduction

2: Algebraic Preliminaries

- 2.1: Groups
- 2.2: The geometry of the three-dimensional rotation group. The Rodrigues-Hamilton theorem
- 2.3: The n -dimensional vector space $V(n)$
- 2.4: How to multiply vectors? Heuristic considerations
- 2.5: A Short Survey of Linear Groups
- 2.6: The unimodular group $SL(n, R)$ and the invariance of volume
- 2.7: On "alias" and "alibi". The Object Group

3: The Lorentz Group and the Pauli Algebra

- 3.1: Introduction
- 3.2: The Corpuscular Aspects of Light
- 3.3: On Circular and Hyperbolic Rotations
- 3.4: The Pauli Algebra

4: Pauli Algebra and Electrodynamics

- 4.1: Lorentz transformation and Lorentz force
- 4.2: The Free Maxwell Field

5: Spinor Calculus

- 5.1: From Triads and Euler Angles to Spinors - A Heuristic Introduction
- 5.2: Rigid Body Rotation
- 5.3: Polarized Light
- 5.4: Relativistic triads and spinors. A preliminary discussion
- 5.5: Review of $SU(2)$ and preview of quantization

6: Supplementary Material on the Pauli Algebra

- 6.1: Useful formulas
- 6.2: Lorentz Invariance and Bilateral Multiplication
- 6.3: Typical Examples
- 6.4: On the use of Involutions
- 6.5: On Parameterization and Integration

7: Homework Assignments

- 7.1: Assignments 1–7

Index

[Glossary](#)

[Detailed Licensing](#)