

Notes for “GRAVITATION” - MTW

Nico Dichter*
Friedrich-Wilhelm-Universität Bonn
(Dated: January 2, 2024)

abc

I. INTRODUCTION

2. Eq. (2.2.19) (P.54)

abc

f^a_{bc} and f^a have to be real as θ^a are real.

II. RELATIVISTIC QUANTUM MECHANICS

A. Quantum Mechanics

B. Symmetries

1. “For this to be unitary and linear, t must be Hermitian and linear” (P.51)

Linearity is trivial and hermiticity follow from the following observation:

$$\begin{aligned}\langle U\Psi|U\Phi\rangle &= \langle (1+i\varepsilon t)\Psi|(1+i\varepsilon t)\Phi\rangle \\ &= \langle \Psi|\Phi\rangle + \varepsilon i (\langle \Psi|t\Phi\rangle - \langle t\Psi|\Phi\rangle) + \mathcal{O}(\varepsilon^2)\end{aligned}$$

Eq. (2.2.2)
 $\Leftrightarrow \langle \Psi|t\Phi\rangle = \langle t\Psi|\Phi\rangle$

Eq. (2.1.5)
 $\Leftrightarrow t^\dagger = t$

III. SCATTERING THEORY

A. ”In” and ”Out” States

ACKNOWLEDGMENTS

Typesetting done with *REVTeX* 4.2.

* nicodichter@nocoffeetech.de