Foreword

This book is a collection of notes and unpublished results which I have accumulated on the subject of classical field theory. In 1996, it occurred to me that it would be useful to collect these under a common umbrella of conventions, as a reference work for myself and perhaps other researchers and graduate students. I realize now that this project can never be finished to my satisfaction: the material here only diverges. I prefer to think of this not as a finished book, so much as some notes from a personal perspective.

In writing the book, I have not held history as an authority, nor based the approach on any particular authors; rather, I have tried to approach the subject rationally and systematically. I aimed for the kind of book which I would have appreciated myself as a graduate student: a book of general theory accompanied by specific examples, which separates logically independent ideas and uses a consistent notation; a book which does not skip details of derivation, and which answers practical questions. I like books with an attitude, which have a special angle on their material, and so I make no apologies for this book's idiosyncrasies.

Several physicists have influenced me over the years. I am especially grateful to David Toms, my graduate supervisor, for inspiring, impressing, even depressing but never repressing me, with his unstoppable 'Nike' philosophy: (shrug) 'just do it'. I am indebted to the late Peter Wood for kind encouragement, as a student, and for entrusting me with his copy of Schweber's now ex-masterpiece *Relativistic Quantum Field Theory*, one of my most prized possessions. My brief acquaintance with Julian Schwinger encouraged me to pay more attention to my instincts and less to conforming (though more to the conformal). I have appreciated the friendship of Gabor Kunstatter and Meg Carrington, my frequent collaborators, and have welcomed occasional encouraging communications from Roman Jackiw, one of the champions of classical and quantum field theory. I am, of course, indebted to my friends in Oslo. I blame Alan McLachlan for teaching me more than I wanted to know about group congruence classes.

Thanks finally to Tai Phan, of the Space Science Lab at Berkeley for providing some sources of information for the gallery data.

Like all software, this book will contain bugs; it is never really finished and trivial, even obvious errors creep in inexplicably. I hope that these do not distract from my perspective on one of the most beautiful ideas in modern physics: covariant field theory.

I called the original set of these notes: The X_μ Files: Covert Field Theory, as a joke to myself. The world of research has become a merciless battleground of competitive self-interest, a noise in which it is all but impossible to be heard. Without friendly encouragement, and a pinch of humour, the battle to publish would not be worth the effort.

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