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D.S.F. Crothers

# Semiclassical Dynamics and Relaxation

With 56 Figures

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I dedicate this book to the memory of my mentor and supervisor, the late Professor Sir David Bates FRS. I gratefully acknowledge my teachers: at Rainey Endowed School: the late Mr Thomas Fazackerley (applied mathematics), the late Dr Arthur Gwilliam (pure mathematics), and the late Mr James McAteer (physics), at Balliol College Oxford: the late Professor Jacobus Stephanus de Wet (applied mathematics) and the late Dr Kenneth Gravett (pure mathematics), and at Queen's University Belfast my other supervisor Professor Ron McCarroll.

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# Preface

The eclectic choice of topics in the book reflects the author's research interests over forty four years, before which he was War Memorial Open Scholar in Mathematics at Balliol College Oxford (1960–1963). Accordingly Chapter 1 covers some good oldfashioned applied mathematics of relevance to Chapters 2–4 concerning atomic and molecular physics in the gaseous phase (single collisions at low pressures) and to Chapter 5 concerning condensed-matter physics in the liquid and solid phases (dielectrics and ferromagnetics). The five chapters are based on a set of five special lectures given to postgraduate PhD students in the Centre for Atomic, Molecular and Optical Physics, in the School of Mathematics and Physics, Queen's University Belfast, in May and June 2003. The author was appointed to a Personal Chair in Theoretical Physics at Queen's University Belfast (1985), and elected as Member of the Royal Irish Academy (1991), Fellowship of the American Physical Society (1994), Honorary Professor of Physics at St Petersburg State University (2003) and Honorary Fellow of Trinity College Dublin (2006).

A good introduction to Chapters 3 and 4 is given by Chapter 52 (Continuum Distorted Waves and Wannier Methods by D.S.F. Crothers et al) of the Springer Handbook of Atomic, Molecular and Optical Physics (ed G.W.F. Drake), 2006.

Belfast,
Northern Ireland

*Derrick Crothers*
*April 2007*

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