

## Contents

|   |     |
|---|-----|
| Preface   | vii |
| Hydrodynamic Limits of Kinetic Models<br>FRANÇOIS GOLSE and C. DAVID LEVERMORE  | 1   |
| Collisionless Plasmas and the Vlasov Maxwell System<br>ROBERT T. GLASSEY  | 77  |
| Irreversible Behaviours in Vlasov Equation and Many-Body<br>Hamiltonian Dynamics: Landau Damping, Chaos and Granularity<br>YVES ELSKENS | 89  |
| Introduction to the Guiding Center Theory<br>P.-L. SULEM  | 109 |
| Variational Formulations of Exact and Reduced Vlasov-Maxwell Equations<br>ALAIN J. BRIZARD  | 151 |
| A Short Introduction to General Gyrokinetic Theory<br>H. QIN  | 171 |
| Introduction to Gyrokinetic Theory with Applications in Magnetic<br>Confinement Research in Plasma Physics<br>W. M. TANG                | 193 |
| From Kinetic to Fluid Descriptions of Plasmas<br>T. PASSOT  | 213 |
| Nonlocal Closures in Long Mean Free Path Regimes<br>A. I. SMOLYAKOV, M. YAGI and J. D. CALLEN   | 243 |
| How to Model Quantum Plasmas<br>GIOVANNI MANFREDI   | 263 |
| Inelastic Kinetic Theory: The Granular Gas<br>I. GOLDBIRSCH   | 289 |