

## Contents

|  |     |
|--|-----|
| Preface  | vii |
| Analysis and efficient computation for the dynamics of two-component Bose-Einstein condensates<br>WEIZHU BAO                               | 1   |
| Quantised vortices, travelling coherent structures and superfluid turbulence<br>NATALIA G. BERLOFF   | 27  |
| Existence and properties of travelling waves for the Gross-Pitaevskii equation<br>FABRICE BÉTHUEL, PHILIPPE GRAVEJAT, and JEAN-CLAUDE SAUT | 55  |
| On the semi-classical limit for the nonlinear Schrödinger equation<br>RÉMI CARLES  | 105 |
| The Gross-Pitaevskii equation in the energy space<br>PATRICK GÉRARD  | 129 |
| Scattering theory for the Gross-Pitaevskii equation<br>KENJI NAKANISHI   | 149 |
| Periodic oscillations of dark solitons in parabolic potentials<br>DMITRY E. PELINOVSKY and PANAYOTIS G. KEVREKIDIS                         | 159 |