

## CONTENTS

|                                                                                                                                                                        |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Gravitation and Hot Big-Bang Cosmology<br><i>J. D. Barrow</i>                                                                                                          | 1   |
| Euclideanized Einstein-Yang-Mills Equations, Wormholes and the<br>Ground-State Wave Function of a Radiation Dominated Universe<br><i>O. Bertolami and J. M. Mourão</i> | 21  |
| Experiments with Neutrinos<br><i>P. Bordalo</i>                                                                                                                        | 39  |
| Topological Defects in the Early Universe<br><i>E. Copeland</i>                                                                                                        | 47  |
| The Space Telescope and the Problems of Cosmology<br><i>P. Crane</i>                                                                                                   | 102 |
| Self-Gravitating Magnetic Monopoles, Global Monopoles and<br>Black Holes<br><i>G.W. Gibbons</i>                                                                        | 110 |
| Understanding Large-Scale Cosmic Structure<br><i>B. J. T. Jones and R. van de Weygaert</i>                                                                             | 134 |
| Metric Space as a Model of Spacetime: Classical Theory and<br>Quantization<br><i>C. J. Isham, Yu.A. Kubyshin and P. Renteln</i>                                        | 159 |
| Galaxy Formation - An Update<br><i>M. S. Longair</i>                                                                                                                   | 174 |
| The Hypothesis of the Expansion of the Universe and the<br>Global Tests<br><i>M. Moles</i>                                                                             | 197 |
| The Early Universe Behaviour with Non-minimal Coupling<br><i>P. Moniz, P. Crawford and A. Barroso</i>                                                                  | 227 |
| Stability of Compactification in Einstein-Yang-Mills Theories<br><i>O. Bertolami, Yu.A. Kubyshin and J.M. Mourão</i>                                                   | 237 |
| Multivariate Analysis and Pattern Recognition Methods:<br>A Short Review and Some Current Directions<br><i>F. Murtagh</i>                                              | 253 |

|                                                                                       |     |
|---------------------------------------------------------------------------------------|-----|
| Cooling of Neutron Stars<br><i>C. J. Pethick</i>                                      | 265 |
| Experiments in High-Energy Physics: A Brief Introduction<br><i>M. Pimenta</i>         | 275 |
| Nucleosynthesis in Big-Bang Models<br><i>F. D. Santos</i>                             | 281 |
| The Cosmological Constant, Third Quantization and All That<br><i>G. Lavrelashvili</i> | 292 |
| Structure of the Inflationary Universe<br><i>M. I. Zelnikov</i>                       | 305 |