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| Nota di contenuto       | Intro -- Supervisor's Foreword -- Abstract -- Acknowledgments -- Contents -- Acronyms -- 1 Introduction -- References -- 2 Astrophysical Context -- 2.1 Radiation -- 2.1.1 Cosmic Rays -- 2.1.2 Gamma Rays -- 2.1.3 Neutrinos -- 2.1.4 Gravitational Waves -- 2.2 Sources -- 2.2.1 Starburst Galaxies -- 2.2.2 Active Galactic Nuclei -- References -- 3 Physics for High-Energy Astrophysics -- 3.1 The Hillas Criterion -- 3.2 Transport Equation -- 3.3 Acceleration Mechanisms -- 3.3.1 Fermi's Original Idea -- 3.3.2 Stochastic Diffusive Acceleration -- 3.3.3 Diffusive Shock Acceleration -- 3.3.4 Other Mechanisms -- 3.4 Losses -- 3.4.1 Escape Processes -- 3.4.2 Energy Losses -- 3.4.3 Absorption and Electron-Positron Pair Production -- References -- 4 Particle Acceleration in the Superwind of Starburst Galaxies. Part I: Large-Scale Processes -- 4.1 Introduction -- 4.2 Basic Model -- 4.2.1 Superwind -- 4.2.2 Scaling Relations -- 4.2.3 Dynamical Conditions -- 4.3 NGC 253 -- 4.4 Particle Acceleration and Losses -- 4.4.1 Acceleration Conditions -- 4.4.2 Stochastic Diffusive Acceleration -- 4.4.3 Diffusive Shock Acceleration -- 4.4.4 Losses and Maximum Energies -- 4.4.5 Particle Distributions -- 4.5 Results -- 4.5.1 Spectral Energy Distributions -- 4.6 Discussions -- 4.6.1 Higher Energies? -- 4.6.2 A Starving Black Hole? -- 4.6.3 Other Potential Sources of CR in the Disk -- 4.6.4 Propagation and Effects Upon Arrival -- 4.7 Summary |

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