

INDEX

- absolute,
 past, future and elsewhere, 79 ff
 rest, 77
 space, 41 ff
 time, 41 ff
 zero temperature, 165
- acceleration, 88 ff
 field, 88 ff
 and gravitation, 140 ff
 relative, 145 ff
- action, 24 ff
- age,
 of the Earth 63
 of the Universe 65, 107
 (alpha) particle, 92
- angular momentum, 98 ff
- annihilation of particles, 106
- anti-matter, 28 ff
- atom, 7
- baryons, 29 ff
- Berkeley, Bishop, 146
- (beta)-decay, 113
- big-bang theory 64
- billiard ball, 3 ff, 19 ff, 39 ff, 84, 94 ff,
 133 ff
- black hole, 37, 142 ff
- Bohr atom, 4, 20 ff
- Boltzmann's constant, 163
- Boojum, 34, 171 ff
- Bose-Einstein statistics, 26
- bosons, 26
- Brownian motion, 151
- carbon, 8
- chaos, 169
- chi medium, 6, 9, 46
- clocks, 57 ff
 radioactive, 63
 synchronization, 70 ff
- collective motion, 10
- collisions, 83 ff
- colour forces, 34, 125 ff
- Compton wavelength, 55, 107, 117, 136
- connectivity, 43 ff
- continuum, 9
- coordinate systems, 47
- cosmic rays, 36 ff
- degree of freedom, 162
- determinism 169
- diffraction, 16 ff
- dimensionless quantities, 108, 182 ff
- dimensionality, 43 ff
- Dirac, 112
 field, 118 ff, 138
- disorder, 156 ff
- distances,
 astronomical, 51 ff, 64
 definition of, 48
- Doppler shift, 136
- $E = mc^2$, 105 ff, 135
- Eddington, 80, 107
- effective mass, 136
- Einstein, 70 ff, 170
- electric charge, 91
 unit of, 92
- electricity, 14
- electromagnetic interactions, 94 ff
 mass, 133 ff
 waves, 15 ff, 24 ff
- electromagnetism, 90 ff
- electrons, 18 ff
 heavy, 27 ff
- electrostatic interaction, 92, 121 ff
- elementary particles, 26 ff
 sizes of, 53 ff, 124
- energy density, 103
 barriers, 167 ff
 rest mass, 105 ff, 134
 unit of, 102
- ensemble of universes, 172
- entropy, 67, 166
- exclusion principle, 26, 163 ff

Cambridge University Press

978-0-521-48486-2 - Time, Space and Things, Third Edition

B. K. Ridley

Index

[More information](#)

190

Fermi–Dirac statistics, 26
 fermions, 26
 ferromagnetism, 19
 fine structure constant, 136
 force field, 91
 fundamental,
 length, 54
 time, 62

 (gamma)-ray, 15
 Gell-Mann, 31
 general relativity, 144
 geometry, 48 ff
 glueball, 34
 gluonium, 34
 gluons, 34, 125 ff
 Gödel, 177
 Grand Unified Theory, 172
 gravitation, 88 ff
 and acceleration, 140 ff
 gravitational,
 constant, 89
 radius, 142 ff
 gravitino, 36
 graviton, 26

 hadrons, 29 ff
 heat, 160 ff
 Heisenberg, 110, 112
 helium, 20 ff
 Higgs particle 36, 139
 hydrogen, 20 ff
 hyperons, 29 ff

 ideal,
 fluid, 8
 gas, 7
 inertia, 81
 indeterminacy, 169
 infinities, 121, 181
 intensity, 102
 interactions, 85 ff, 117 ff
 range of, 123 ff
 interference, 16 ff
 intermediate vector boson, 34
 inverse square law, 44
 ion, 18
 isotope, 21

 kinetic energy, 96 ff
 Kepler, 3

 leptons, 27 ff
 lifetime of particles, 30, 63, 65
 lithium, 20 ff

Index

Lorenz transformation, 75, 78
 low-dimensional materials, 46 ff

 Mach, 146
 principle, 147
 magnetism, 14
 atomic, 19
 Many Worlds, 174 ff
 mass,
 electromagnetic, 133 ff
 gravitational, 89, 139
 inertial, 90, 134 ff
 standard of, 89
 Maxwell's equations, 76, 80
 mesons, 29 ff
 momentum, 96 ff
 motion,
 Brownian, 151
 collective, 10
 orbital, 83 ff
 uniform, 76 ff

 natural logarithm, 158
 neutrinos, 27 ff
 neutron, 21
 Newton, 81, 145 ff
 noise, 151
 non-Euclidean,
 geometry, 49 ff
 space, 144
 non-locality, 170, 173
 nuclear energy, 106 ff
 nuclear force, 35, 123
 nucleons, 29 ff

 orbital motion, 83 ff

 parallax, 51
 parity violation, 127 ff
 Pauli, 112
 exclusion principle, 26, 163 ff
 perfect crystal, 8
 phase, 84 ff
 phonons, 25
 photoelectric effect, 24
 photonics, 61
 photons, 25
 photon field, 118 ff
 Planck's constant, 22 ff
 Poincaré, 70
 point particle, 5, 31
 position, 41 ff
 positronium, 33
 positrons, 28
 potential energy, 99

Cambridge University Press

978-0-521-48486-2 - Time, Space and Things, Third Edition

B. K. Ridley

Index

[More information](#)*Index*

191

- power,
 - unit of, 102
- pressure, 151
- principle of equivalence, 139 ff
- probability, 112, 152 ff
- proton, 18 ff
- pulsar, 37
- quantum,
 - of action, 24 ff, 62, 110 ff
 - chromodynamics, 34, 125
 - field, 118 ff
 - of freedom, 113 ff
 - gravity, 131
 - theory, 112
- quarkonium, 33
- quarks, 28 ff, 124 ff
 - colours, 33 ff, 125 ff
 - flavours, 31 ff
- quasar, 183
- radiation pressure, 103
- radius of Universe, 55 ff, 143
- random error, 155 ff
- regular solids, 2
- relativistic,
 - distortion, 75 ff
 - thermodynamics, 160
- rest-mass energy, 105 ff, 134
- Schrödinger, 112
- Sciama, 147
- simple harmonic motion, 83 ff
- size of electron, 135 ff
- soliton, 13
- space,
 - absolute, 41 ff
 - Euclidean, 48
 - homogeneous, 46
 - isotropic, 46
 - span of, 53 ff
- space-time, 74 ff
- span of time, 61 ff
- special relativity, 72 ff, 104 ff, 142
- spin, 19
- star,
 - hyperon, 37
 - neutron, 37, 114
- states of matter, 7, 14, 19
- statistics, 112, 172
- strings, 35 ff
- strong interaction, 26, 123 ff
- superconductivity, 122
- symmetry, 128 ff
- tachyons, 81
- temperature, 161 ff
 - absolute, 163
 - scales, 164
- thermodynamics, 166
 - equilibrium of, 160
 - relativistic, 160
- time,
 - absolute, 41 ff
 - arrow of, 67 ff, 129 ff
- dilation, 75
 - here and there, 73 ff
 - imaginary, 68
 - nuclear, 30
- uncertainty principle, 110 ff
- unified field theory, 131, 135, 172
- uniform motion, 76 ff
- uniqueness, 171 ff
- unit,
 - of charge, 92
 - of energy, 102
 - of entropy, 166
 - of length, 52
 - of mass, 89
 - of power, 102
 - of temperature, 163
 - of time, 60
- Universe,
 - age of, 65
- expanding, 67 ff
 - radius of, 55 ff, 143
- uranium, 21
- utonium, 3 ff
- vacuum polarization, 117, 126, 138
 - fluctuations, 119 ff
- velocity, 70 ff
 - of light, 64, 71 ff
- virtual processes, 115 ff
- voltage, 99
- waves, 10 ff, 15 ff
 - amplitude, 103 ff
 - elastic, 10 ff
 - electromagnetic, 24 ff
 - electron, 22 ff
 - probability, 23
- weak interaction, 34, 127 ff
- X-particle, 131
- X-ray, 15
- zero-point energy, 119 ff, 181