

Cambridge University Press

978-1-107-64110-5 - The Auger Effect and other Radiationless Transitions

E. H. S. Burhop

Index

[More information](#)

INDEX

- Angular correlations
 - between successive conversion electrons, 127
 - in internal pair production, 152
- Annihilation, radiationless, of the positron, 160–1
- Auger transitions
 - of negative mesons in an atomic field, 166–70
 - of negative mesons in an atomic field, the number of ejected Auger electrons, 169–70
- Beta-ray spectra, 6, 7
- Breadth of X-ray emission lines and absorption bands, 64, 84–8
- Cloud chamber studies of the Auger effect, 2, 24–8
- Coster-Kronig transitions, 68
 - and *L* and *M* satellites, 76–82
 - and X-ray line intensities, 82–4
 - and X-ray line widths, 84–8
 - and X-ray spectra of solids, 95–7
 - calculation of transition rate for, 70–2
 - types of, 72–6
- Counters (calibrated)
 - use of, for measuring fluorescence yield, 41–4
 - use of, for measuring γ -ray internal conversion coefficients, 104–7
- Energy levels
 - of doubly ionized atoms, 76
 - of negative mesons in an atomic field, 164–5
- Fermi plot, 111
- Fluorescence yield
 - calculation of, 16
 - measurement of, 3, 31–7
 - measurement of, using calibrated Geiger counters, 39
 - measurement of, using ionization by X-rays at a critical frequency, 37–8
 - measurement of, using photographic emulsion techniques, 30
 - measurement of, using proportional counters, 28–30
- Forbidden nuclear transitions
 - accompanied by electron emission, 21, 141–3
 - accompanied by pair production, 156–8
- Gamma rays, internal conversion of, 8, 98–143
- Inner shell ionization, types of, 5, 23
- Internal conversion, 8, 98–143
 - angular correlations between successive conversion electrons, 127
 - theory of, 17
- Internal conversion coefficient
 - comparison of measured and calculated values, 119–26
 - definition of, 98
 - estimate of, by chemical method, 115
 - measurement of, 104–15
 - measurement, for a complex γ -ray spectrum 113–14
 - measurement, using calibrated counters, 115
 - measurement, results of calculations of, 117–19
 - results of measurements of, 128–38
- Intensity of X-ray emission lines, 65
- Internal pair production, 9, 144–60
 - angle between direction of emission of electron and positron, 152
 - associated with forbidden nuclear transitions, 156–8
 - coefficient, 9, 144–60
 - coefficient, calculation of, 145–52
 - coefficient, measurement of, 152–6
 - energy distribution of ejected particles, 149–50
- K*-series fluorescence yield, 44–51
- L*-series fluorescence yield, 51–7
- M*-series fluorescence yield, 57
- Magnetic spectra of Auger electrons, 2, 57–63
- Magnetic spectrographs for measuring internal conversion coefficients 107–11

Cambridge University Press

978-1-107-64110-5 - The Auger Effect and other Radiationless Transitions

E. H. S. Burhop

Index

[More information](#)

188

INDEX

- Mesons, Auger processes in capture of, 9, 162–70
- Multipole radiation, field potentials for, 18
- Nuclear energy levels, assignment of angular momentum and parity of, 115–16
- Nuclear isomers, 138–41
relation between half life and excitation energy, 139
- Nuclear models, 102–4
- Oscillator strength, 68
- Perturbations in molecular spectra, 174–6
- Photo-electron spectrum of γ -radiation—comparison with the internal conversion spectrum, 113
- Photographic emulsion techniques, use of, in studying Auger effect, 30
- Positrons, homogeneous, from γ -ray emitters, 158–60
internal production of, 9, 144–60
radiationless annihilation of, 9, 160–1
- Predissociation, 8, 176–8
- Proportional counter, use of, in studying Auger effect, 30
- Radiation from electric and magnetic multipoles, 98–100
- Radiation from an excited nucleus
effect of electrons on rate of, 18–21
type of radiation expected using different nuclear models, 102–4
- Radiationless annihilation of positrons, 9, 160–1
- Radiative transition rate for mesons in an atomic field, 166–70
- Selection rules in nuclear transitions, 100–1
- Theory of the Auger effect
(non-relativistic), 11–13
Pauli principle in, 15
(relativistic), 13–15
- X-ray absorption bands, breadth of, 64, 84–8
- X-ray emission bands of solids, 92–5
breadth and intensity relations in, 95–7
influence of Auger transitions on shape of, 94
- X-ray emission lines, breadth of, 64, 84–8
- X-ray line intensities, 65, 82–4, 91–2
- X-ray satellite lines, 66, 76–82, 89–91
excitation potentials for, 79
intensity of, 77, 80–2
- X-ray spectra and the Auger effect, 3, 64–97