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113 lj - ll
114 lm - lo
115 lp - lr
116 ls - lss
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119 ly - lz
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122 mg - mi
123 mj - ml
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127 mst - mu
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135 np - nr
136 ns - nsp
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140 oa - oc
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142 og - oi
143 oj - ol
144 om - oo
145 op - or
146 os - oss
147 ost - ou
148 ov - ox
149 oy - oz
150 pa - pc
151 pd - pf
152 pg - pi
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154 pm - po
155 pp - pr
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174 rm - ro
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218 sv - sx
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222 tg - ti
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270 ya - yc
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282 zg - zi
283 zj - zl
284 zm - zo
285 zp - zr
286 zs - zss
287 zst - zu
288 zv - zx
289 zy – zz

UA

1000 Review journals and periodicals.
For an explanation of the notation cf. RVK online information

UB General reference works, bibliographies, history and philosophy of physics.

1001 - 1010 General reference works for the field of physics
1012 Address lists of companies and sources of material
1014 Commercial catalogues
1015 Aspects of nomenclature
1020 Introduction to the use of the literature in the field of physics
1024 Guides for writing physics articles and giving lectures on physics
1025 Bibliographies of periodical titles for physics journals
1027 Research programmes
1028 Bibliographies of dissertations in the field of physics
1030 - 1067 Current bibliographies of sub-fields in physics
1030 Current bibliographies of reports on physics: *cf. UA 1000 ff.*
1031 History of physics
1036 Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves.
1038 Thermodynamics, statistical physics, quantum statistics
1040 Classical fields, electrodynamics, optics, lasers, quantum optics, theories of relativity.
1044 Quantum theory, quantum mechanics
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Indiv. signum: Astronomy & Astrophysics Abstracts
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1067 Experimental methods in fundamental and applied physics
1070 - 1107 Retrospective bibliographies of sub-fields in physics
1070 Retrospective (complete) bibliographies and library catalogues for the entire field of physics.
1076 Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves.
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1105 Polymer physics
1107 Experimental methods of fundamental and applied physics.
1110 +Z2S Dictionaries of physics terminology.
Ordered by the number keys with reference to the lesser-known language (CSN of the editor).

1400 - 1490 **Terminology dictionaries for the field of physics**

1400 **General physics**

1405 **Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves**

1415 **Thermodynamics, statistical physics, quantum statistics**

1420 **Classical fields, electrodynamics, optics, lasers, quantum optics, theories of relativity**

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1487 **Polymer physics**

1490 **Experimental methods in fundamental and applied physics**

1700 **Bibliographies of biographical reference works on physicists in general**

1710 +Z2S **Personal bibliographies.**
Ordered according to the number keys (CSN of the editor).

2005 - 2090 **Index of researchers in individual sub-fields,**
(*used only if their research activity is limited to a single sub-field, such as astronomers, meteorologists etc.*)

2005 **Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves**

2015 **Thermodynamics, statistical physics, quantum statistics**

2020 **Classical fields, electrodynamics, optics, lasers, quantum optics, theories of relativity**

2030 **Quantum theory, quantum mechanics**

2035 **Many-body theory**

2040 **Atomic and molecular physics**

2045 **Nuclear physics**

2050 **Elementary-particle physics, high-energy physics**

2055 **Solid-state physics, condensed matter**

2060 **Crystallography, mineralogy, metallurgy, materials science**

2070 **Structure of liquids, physics of gases, plasma physics**

2075 **Astronomy, astrophysics**

2085 **Geophysics, meteorology, physics of aerosols**

2088 **Polymer physics**

2090 **Experimental methods in fundamental and applied physics**

2300 - 2490 **History of physics**

2300 **General overviews**

2310 **Antiquity**

2320 **Middle Ages**

2340 **Modern period, overall**

2360 **History of physics up to the end of the 18th century**

2380 **History of modern physics, 19th and 20th centuries (up to 1930)**

2385 **20th century (from 1930)**

2405 - 2490 **History of individual sub-fields and topics**

2405 **Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves**

2415 **Thermodynamics, statistical physics, quantum statistics**

2420 **Classical fields, electrodynamics, optics, lasers, quantum optics, theories of relativity**

2430 **Quantum theory, quantum mechanics**

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2460 **Crystallography, mineralogy, metallurgy, materials science**
2470 **Structure of liquids, physics of gases, plasma physics**
2475 - 2484 Astronomy, astrophysics
2475 **General overview**
2476 **Babylonians**
2477 **Ancient Greece**
2478 **Middle Ages**
2479 **Modern period**
2480 **16th century**
2481 **17th century**
2482 **18th century**
2483 **19th century**
2484 **20th century**
2485 **Geophysics, meteorology, physics of aerosols**
2487 **Polymer physics**
2490 **Experimental methods in physics, physics technology**

2502 - 2799 Collected works
2502 – 2510 ***Authors A***
2502 **Abbe, Ernst**
2505 **Aitken, John**
2510 **Arago, Francois**
2513 – 2540 ***Authors B***
2513 **Bethe, Hans A.**
2515 **Bloch, Claude**
2520 **Bohr, Niels**
2525 **Boltzmann, Ludwig**
2530 **Born, Max**
2532 **Boyle, Robert**
2535 **Bradley, Percy**
2537 **Brahe, Tycho**
2540 **Bridgman, James**
2542 **Broglie, Louis de**
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2546 **Chandrasekhar, Subrahmanyan**
2548 **Compton, Arthur Holly**
2549 **Condon, Edward Uhler**
2662 **Copernicus, Nicolaus**
2554 **Curie, Marie**
2555 **Curie, Pierre**
2558 – 2560 ***Authors D***
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2560 **Dyson, Freeman J.**
2565 – 2570 ***Authors E***
2565 **Ehrenfest, Paul**
2570 **Einstein, Albert**
2573 – 2590 ***Authors F***
2573 **Fabry, Charles**
2574 **Faddeev, Ludwig D.**
2575 **Faraday, Michael**
2580 **Fermi, Enrico**
2585 **Fraunhofer, Joseph von**
2590 **Fuchs, Johann N. von**
2592 – 2595 ***Authors G***
2592 **Galilei, Galileo**
(*See also IU 9175*).
2594 **Gennes, Pierre-Gilles de**
(*French physicist; 1932-2007*).
2595 **Ginzburg, Vitaly L.**
2598 – 2625 ***Authors H***
2598 **Hamilton,William Rowan**
2600 **Heaviside, Oliver**

2603 **Heisenberg, Werner**
2605 **Helmholtz, Hermann von**
2610 **Henry, Joseph**
2615 **Hertz, Heinrich**
2620 **Hooke, Robert**
2625 **Huygens, Christiaan**

2630 – 2630 ***Authors I***

2630 **Ignatovsky, Vladimir Sergeevich**

2635 – 2640 ***Authors J***

2635 **Jeffreys, Harold**
2640 **Joule, James Prescott**

2642 – 2664 ***Authors K***

2642 **Kamerlingh Onnes, Heike**
2645 **Kapitza, Peter L**
2650 **Kelvin,William Thomson, Lord**
2652 **Kepler, Johannes**
(*See also CE 6800 und NU 5103*).
2655 **Kirchhoff, Gustav**
2660 **Kirkwood, John Gamble**
2664 **Kubo, Ryogo**

2665 – 2682 ***Authors L***

2665 **Landau, Lev Davidovich**
2670 **Langmuir, Irving**
2675 **Laue, Max von**
2676 **Lee, Tsung-Dao**
2677 **Lieb, Elliot H.**
2678 **Lifshitz, Evgeny M.**
2680 **Löbl, Oskar**
2682 **Loschmidt, Joseph**
(*Austrian physicist and chemist; naturalist; 1821-1895*).

2685 – 2691 ***Authors M***

2685 **Maxwell, James Clerk**
2690 **Mayer, Robert**
2691 **Mayer, Tobias**
2693 **Meitner, Lise**

2695 – 2700 ***Authors N***

2695 **Néel, Louis**
2700 **Newton, Isaac, Sir**
(*See also CF 6800*).

2705 – 2705 ***Authors O***

2705 **Onsager, Lars**

2710 – 2732 ***Authors P***

2710 **Pascal, Blaise**
(*See also CF 6860*).
2715 **Pauli,Wolfgang**
2720 **Planck, Max**
2725 **Powell, Cecil Frank**
2730 **Prandtl, Ludwig**
2732 **Proca, Alexandre**

2733 – 2735 ***Authors R***

2733 **Raman, Chandrasekhara Venkata**
2734 **Rivlin, Ronald S.**
2735 **Rutherford, Ernest, Lord**

2737 – 2756 ***Authors S***

2737 **Salam, Abdus**
2740 **Sano, Shizuwo**
2745 **Schiaparelli, Giovanni**
2747 **Schrödinger, Erwin**
2748 **Schwarzschild, Karl**
2749 **Schwinger, Julian S.**
2750 **Selényi, Pal**
2753 **Skyrme, Tony Hilton Royle**
2755 **Sommerfeld, Arnold**

2756 **Stevin, Simon**
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2757 **Tamm, Igor E.**
2758 **Tesla, Nikola**
2760 **Thomson, James**
2765 **Tomonaga, Shin'ichiro**
2773 – 2773 ***Authors V***
2773 **Volta, Alessandro**
2778 – 2778 ***Authors W***
2778 **Wigner, Eugene Paul**
(*Nobel prizewinner; American physicist of Austro-Hungarian origin; 17.11.1902-01.01.1995*).
2780 **Wolf, Max**
2785 – 2785 ***Authors Y***
2785 **Young, Thomas**
2799 **Others**
(CSN)

2800 **Anthologies of classic papers**
2810 +Z2S **Individual classic papers**
(*Ordered by authors using the number keys and CSN of the editor, e.g. Ostwald's classics*).
3100 - 3399 Collected biographies of physicists
3100 **General overview**
3110 +Z2S **Biographies and autobiographies of physicists,**
including biographical material such as correspondence
(*ordered by the number keys for the subjects of the biographies and the CSN of the author or editor*).
3410 +Z2S ***Festschrift*s and memorial publications for individual persons**
(*Ordered by the number key for the subject and the CSN of the editor).*
3710 +Z2S ***Festschrift*s and memorial publications for groups**
(*e.g. companies such as Hoechst, BASF) (ordered by number key for the group and CSN of the editor or author*).
4010 **Research planning**
4020 **Curiosities, perpetual motion machines, etc.**
4049 - 4060 Didactics of physics
4049 **General didactics of physics**
4050 **Physics education, college curricula**
4052 **Aspects of professional education and professions within physics**
4053 **Physics experiments for schools**
4056 **Didactics for physics education in schools**
(*See also DP 2700*).
4060 **Didactics teaching materials**
4070 – 4079 School textbooks
4070 **General treatments of physics, works at all levels**
4071 **Textbooks for technical colleges, adult education, correspondence and online courses**
4072 - 4079 School textbooks for:
4072 **High schools, upper forms (classes 11-12)**
4073 **Middle schools, middle forms (classes 7-10)**
4074 **Technical schools**
4075 **Secondary schools**
4076 **Elementary schools**
4077 **Special education etc.**
4079 **Preschools,**
(*if not included in science education (TB 4070)*).
4080 **Continuing education**
4085 **Examination preparation for teaching and masters degrees**
4090 - 4097 Curricula for:
4090 **University level courses**
4091 **Technical schools, adult education, correspondence and online courses**
4092 **High schools, upper forms (classes 11-12)**
4093 **Middle schools, middle forms (classes 7-10)**

4094 **Technical schools**
4095 **Secondary schools**
4096 **Elementary schools**
4097 **Special education etc.**

4100 - 4150 Occupational safety
4100 **Laboratory equipment and plant**
4150 **Prevention of accidents and safety rules**

5000 - 5340 Popularisations
5000 **Popular science, general**
5020 **Popular physics, general**
5040 **Mechanics, mechanics of continuum systems, hydrodynamics, oscillations and waves.**
5060 **Thermodynamics, statistical physics, quantum statistics**
5080 **Classical fields, electrodynamics, optics, lasers, quantum optics, theories of relativity.**
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5240 **Structure of liquids, physics of gases, plasma physics.**
5260 **Astronomy, astrophysics**
5280 **Geophysics, meteorology, physics of aerosols.**
5290 **Polymer physics**
5300 **Experimental methods in fundamental and applied physics**
5340 **Other sub-fields or groups of related sub-fields, supplements.**
(S*ee also literature with the notations of systematic compilations from other fields*)**.**

6000 - 9000 Physics and philosophy
6000 **General physics and philosophy**
Philosophy of physics; see also CC 3500
6500 **Causality**
7000 **Philosophical problems of quantum mechanics**
7500 **Space and time**
8000 **Determinism and indeterminism**
8500 **Quantum mechanics and the problem of objectivity**
9000 **Other topics in philosophy**
e.g. dimensional equations...

UC ENCYCLOPAEDIAS AND TEXTBOOKS UC (page heading)

UC Encyclopaedias and textbooks
100 - 299 General physics textbooks
100 - 199 **from 1900 – 1999**
(*Ordered by the last two numbers of the year in which the 1st edition was published).*
200 - 299 **from 2000 – 2099**
(*Ordered by the last two numbers of the year in which the 1st edition was published).*
300 **Collections of physics problems, formula tabulations**
400 **Physics teaching laboratories**
500 **Physics encyclopaedias and thesauri** (*CSN of the editor*)
550 **Major physics encyclopaedias and thesauri** (*CSN of the editor*)
600 **Information technology in physics in general**
(*See also ST 630*).

UD Conferences, summer schools, complete publications series

1900 - 2999 Conferences on general or theoretical physics
(*Ordered by the year of the conference with the CSN of the place name).*

4000 - 5999 Summer schools, periodic conferences on general topics
(*For conferences on special topics: cf. the corresponding topic).*

4124 Lectures in theoretical physics, summer institutes on theoretical physics: Boulder, University of Colorado

4304 Cargese lectures in theoretical physics

4305 Cargese lectures in physics

4345 Coral Gables Conferences

4615 *Scuola Internazionale di Fisica*

4847 *Ecole d'Eté de Physique Théorique* (Les Houches): Sessions

5225 Liperi Summer School in Theoretical Physics: Proceedings

5600 The Open University

5630 *Plansee Seminar*, lectures

6100 - 9360 Complete publications series

6100 Masters theses, *Habilitation* theses;
comprehensive works within universities (CSN of the author's name).

6301 Ramakrishnan: Symposia on theoretical physics

7566 Essays in Physics

8000 Hamburger Contributions on Applied Mineralogy

8210 Lebedev Physics Institute Proceedings

8220 Lecture Notes in physics

8221 Lecture Notes in physics/M

8400 Materials Research Society Symposium Proceedings

9225 *Seminaire de Théories Physiques*. Ed.: Louis de Broglie,
(*up to Vol. 37 under the title:* Ergebnisse der exakten Naturwissenschaften).

9310 Springer tracts in modern physics

9360 Institute for Solid State Physics: Technical Reports (ISSP Ser. A)

9450 Topics in applied physics

9460 Topics in current physics

UF MECHANICS, MECHANICS OF CONTINUUM SYSTEMS, HYDRODYNAMICS, OSCILLATIONS AND WAVES UF (page heading)

UF Mechanics, mechanics of continuum systems, hydrodynamics, oscillations

1000 **Mechanics, general**
1020 **Compendia, lecture series, reviews**
1030 **Specialised dictionaries and encyclopaedias**
1050 **Collections of exercises from the field of mechanics**
1070 **Tables, tabulations**
1090 **Complete publications series**
1100 - 1199.99 **Conferences, symposia, summer schools on mechanics, mechanics of continuum systems, hydrodynamics, oscillations**
(*Ordered by the last two numbers of the year of the conference).*
1100 - 1199 **for 1900 – 1999**
(*Ordered by the last two numbers of the year of the conference).*
1199.00 – 1199.99 for 2000 – 2099
(*Ordered by the last two numbers of the year of the conference).*
1200 **Statics and the mechanics of rigid bodies**
1500 **Applied mechanics**
1500a **Celestial mechanics: see US 1200**
1570 **Pole structures, beams, girders**
1590 **Shoring**
1610 **Stability (bending, folding, buckling)**
1800 **Strength of materials,**
(long-term strength, fatigue strength, mechanics of breakage, fatigue)
1900 **Kinematics**
1950 **Kinetics (dynamics)**
2000 **Mechanics of continuum systems, general**
3000 **Theory of elasticity**
3100 **Plasticity**
(*See also polymer physics, UV 4000 ff).*
3150 **Mechanics of breakage**
3200 **Thermoelasticity**
3300 **Photoelasticity**
3500 **Rheology**

4000 **Fluid mechanics, fluid dynamics, mechanics of liquids and gases (hydraulics, pipe flow, coagulation flow)**
4050 **Statistical hydrodynamics, statistical fluid mechanics**
4100 **Laminar flow**
4200 **Theory of interfaces including lubrication theory**
4300 **Turbulent flow**
4500 **Applied hydrodynamics**
4700 **Aerodynamics, general**
4750 **Compressible flow,**
(*infrasonic and supersonic flow, flow profiles, shock waves, interfaces, turbulence*).
4800 **Gas dynamics**

5000 - 6900 **OSCILLATIONS, WAVES, ACOUSTICS**
5000 **Oscillations and waves, general**
5100 **Elementary theory of oscillations**
5200 **Oscillations in technology (percussion, vibration, damping, absorption)**
6000 **Acoustics, general**
6200 **Propagation of sound waves and acoustic surface waves**
6300 **Ultrasonics, opto-acoustics, *Schlieren* method**
6310 **Ultrasonic tomography**
6400 **Shock waves**
6700 **Physical music theory (tonal acoustics)**
6800 **Physics of hearing (physiological acoustics)**
6900 **Applied and technical acoustics, sound technology,**
(*noise reduction, ultrasonic and infrasonic technology, production of sound, e.g. sirens*).

UG Thermodynamics, statistical physics, quantum statistics

1000	**Thermodynamics, general classical phenomenology**
1020	**Compendia, lecture series, reviews**
1030	**Specialised dictionaries and encyclopaedias**
1050	**Collections of exercises for thermodynamics**
1070	**Thermodynamics tabulations**
1090	**Complete publications series**
1100 - 1199.99	**Conferences, symposia, summer schools on the entire field of thermodynamics** (*Ordered by the last two numbers of the year of the conference).*
1100 - 1199	**for 1900 – 1999** (*Ordered by the last two numbers of the year of the conference).*
1199.00 – 1199.99	**for 2000 – 2099** (*Ordered by the last two numbers of the year of the conference).*
1200	**Applied and technical thermodynamics**
1300	**Kinetic theory of gases, gas dynamics** *Statistical mechanics of gases: see UG 3100.*
2000	**Thermodynamics of irreversible processes, relaxation, spin relaxation. General theories of systems with spins and pseudospins.** *Applications to the theory of magnetism, spin waves, spin glass theory, For spin temperatures: see UP 6700.*
2300	**Theory of transport processes, general** *Transport processes in semiconductors: see UP 3200*
2500	**Heat transport, general**
2600	**Heat conductivity**
2700	**Convection**
2800	**Thermal radiation**
2850	**Thermal insulation**
2900	**Matter transport (matter exchange, diffusion)**
3000	**Entropy and information theory**
3100	**Statistical mechanics, Ising model, order-disorder models, percolation theory, cellular automata**
3500	**Statistical thermodynamics**
3700	**Fluctuations, noise, reciprocal noise**
3800	**Theory of phase transitions**
3900	**Synergetics, cooperative and collective phenomena, spontaneous ordering processes, branching processes, chaotic processes, fractals, self-organising systems, critical phenomena.**
4000	**Quantum statistics**
4000a	**Fractional statistics and anyons: see UO 4100**

UH Classical fields, electrodynamics, optics, quantum optics, lasers, theories of relativity

1000 - 4000 Classical fields, electrodynamics

1000 General electrodynamics, electromagnetism
1020 Compendia, lecture series, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for electrodynamics
1070 Tables, tabulations
1090 Complete publications series
1100 – 1199.99 Conferences, symposia, summer schools on the entire field of electrodynamics
(*Ordered by the last two numbers of the year of the conference).*
1100 - 1199 for 1900-1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 - 1199.99 for 2000-2099
(*Ordered by the last two numbers of the year of the conference).*
2000 Electrostatics
2500 Magnetostatics
3000 Electromagnetic waves, waveguides, cavity resonators, coaxial cables, surface waves, Rayleigh waves
(*See also ZN 6000 ff).*
3500 Electrical conductivity, general
For electrical conductivity in solids, see also UP 5000; superconductivity cf. UP 2200; thermoelectricity cf. UP 5400; see also solid-state physics, UP 1000 ff; semiconductors cf. UP 2800; electrical properties of solids cf. UP 4500; dielectrics cf. UP 5100; ferroelectricity cf. UP 4700; for piezoelectric materials cf. UP 4900.
4000 Technical electrodynamics for physicists; electronics cf. UX 2100
(*See also ZN 1000 ff*).

5000 - 5500 Physical optics
For optical properties of solids, cf. UP 8000 ff.
5000 General overview
5020 Compendia, lectures, reviews
5030 Specialised dictionaries and encyclopaedias
5050 Collections of exercises for optics and quantum optics
5070 Tables
5080 Geometrical optics
5090 Complete publications series
5100 Conferences, symposia, summer schools on the entire field of optics, quantum optics, lasers, and quantum electronics
(*Ordered by the last two numbers of the year of the conference).*
5100 - 5199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
5199 - 5199.99 for 2000 - 2099
(Ordered by the last two numbers of the year of the conference).
5200 Diffraction
5250 Absorption
5300 Dispersion, scattering; opalescence.
See also light scattering by solids, UP 9000).
5320 Reflection
5350 Polarised light
5400 Interference, optical filters, interferometry in general, Fourier optics, Fourier spectroscopy, polarisation.
5420 Theory of tomography, image reconstruction from projections, applications of the Radon transformation.
Specific tomography methods: see UF 6310, UH 6450, UP 9410.
5450 Holography

5500 **Magneto-optics and electro-optics in general, Kerr effect, Voigt effect, time-dependent effects, rotation of the plane of polarisation, Zeeman effect.**
(*See also optical properties of semiconductors, UP 3050*).
(*See also optical properties, optical interactions, UP 8000 ff).*
(S*ee also UM 2300*).

5600 - 8700 **Quantum optics, laser and maser theory, quantum electronics, particle optics, relativity theory.**

5600 **General overview**

5610 **Lasers, general**

5615 **Solid-state lasers, incl. fixed-frequency lasers; solid-state infrared lasers, colour-centre lasers, ruby lasers, YAG lasers, neodymium glass lasers.**

5616 **Semiconductor lasers, laser diodes.**
For Gunn devices and the Gunn effect, cf. UP 3200.

5618 **Picosecond lasers, femtosecond lasers, soliton lasers**

5620 **Liquid-media and dye lasers**

5625 **Chemical lasers**

5628 **Excimer lasers and exciplex lasers**

5630 **Gas lasers, ion lasers**

5632 **Infrared and far-infrared lasers,**
Infrared spectroscopy: see UH 6000 ff.

5635 **Free-electron lasers**

5638 **X-ray lasers**

5640 **Masers**

5650 **Excitation of lasers, general**

5655 **Excitation by electric currents**

5660 **Excitation by gas discharge**

5665 **Optical pumping**

5670 **Other types of excitation**

5680 **Specific problems in laser physics.**
Coherence, spectral problems, intensity, polarisation, Q-factor modulation, mode coupling, fluorescence processes, decay, phase conjugation.

5690 **Nonlinear optics, general.**
Stimulated Raman scattering, stimulated Brillouin scattering, frequency multiplication, self-focussing, self-defocussing, optical bistability, multiple-photon absorption and multiple-photon processes in general, nonlinear optical materials, e.g. KDP (potassium dihydrogen phosphate), ADP.
(*For nonlinear infrared spectroscopy cf. UH 6060*).

5695 **Statistical optics, speckles, laser noise.**

5700 **Coherent and transient optics**
Optical nutation, superradiance, photon echoes, self-induced transparency.

5705 **Dynamic lattices, transient lattices**

5710 **Laser spectroscopy**
Pico- and femtosecond spectroscopy, time-resolved spectroscopy, fluorescence line narrowing, saturation spectroscopy.
(Infrared laser spectroscopy cf. UH 6030).

5712 **Spectral hole-burning**

5715 **Opto-acoustics and opto-acoustic laser molecular spectroscopy in general, Debye-Sears effect, Raman-Naht effect, opto-acoustic effect.**
(Photoacoustic infrared spectroscopy cf. UH 6030).

5720 - 5790 **Laser applications**

5720 **General overview**

5721 **Lasers in chemistry**

5722 **Lasers in biology**

5723 **Lasers in medicine**

5725 **Lasers in metrology in general**

5730 **Distance measurements using lasers**

5735 **Velocity measurements using lasers**

5737 **Rotation measurements using lasers; laser gyroscopes**

5740 **Temperature measurements using lasers**

5745 **Concentration measurements using lasers**

5750 **Lasers in materials processing and materials testing.**

5755 **Lasers in communications technology, opto-electronic signal processing.**
(*See also UH 7500*).

5760 **Fibre optics**
(*See also UH 6700*).
5765 **Lasers and integrated optics, signal cables, opto-electronic devices** (*see also UH 6700*).
(*See also UP 4970*).
5770 **Lasers in plasma physics,**
nuclear fusion cf. UR 8000 ff.
5775 **Lasers for isotope separation**
Isotope separation in general, cf. UN 5500
5790 **Other topics involving lasers, e.g. laser scanning, light modulation, triggering thyristors.**

5800 - 5870 Luminescence and phosphorescence
5800 **Luminescence in general**
5810 **Photoluminescence**
5820 **Radioluminescence**
5830 **Electroluminescence**
5840 **Mechanical and thermoluminescence, triboluminescence**
5850 **Chemoluminescence**
5860 **Phosphorescence**
5870 **Fluorescence**

5900 **Infrared and far-infrared optics in general.**
For optical instruments cf. UH 6700.
5910 - 5950 **Infrared sources**
5910 **General overview**
5915 **Thermal infrared radiation sources**
Infrared, far-infrared and submillimetre lasers, cf. UH 5632
5950 **Millimetre and submillimetre travelling wave tubes**
Infrared Raman lasers, cf. UH 5632
5955 **Infrared detectors in general**
5960 **Thermal infrared detectors**
5965 **Infrared quantum detectors**
5970 **Infrared photography, image converters and infrared cameras in general.**
5975 **Infrared fibre optics, infrared and submillimetre astronomy cf. US 1600.**
Atmospheric propagation cf. UT 5800; Infrared laser chemistry cf. VG 8850; Infrared laser isotope separation cf. UH 5775 Plasma diagnosis cf. UR 8200
(see also UH 5760).
6000 **Infrared and far-infrared spectroscopy in general, Fourier-transform infrared spectroscopy (FTIR)**
Applications in solid-state physics cf. UP 9100.
6010 **Infrared emission spectroscopy**
6020 **Opto-acoustic infrared spectroscopy**
(see also UH 5715).
6030 **Infrared laser spectroscopy**
(see also UH 5632).
6040 **Magneto-infrared spectroscopy**
6050 **Heterodyne infrared spectroscopy**
6060 **Nonlinear infrared spectroscopy**
(see also nonlinear optics UH 5690).

6200 - 6650 **Particle optics, ion-beam optics**
6200 - 6399 **Electron optics, electron microscopy**
6200 **Electron optics and electron microscopy in general**
6210 **Electron optics**
6220 **Ion (beam) optics**
6230 **Electron sources**
6240 **Ion sources**
6290 **Image detectors and image amplifier technology**
6300 **Transmission electron microscopy in general**
6301 **Conferences and publications series**
6302 **Applications to semiconductor technology**
6303 **Applications to materials science and materials testing**
(besides semiconductor technology).
6304 **Sample preparation**

6305 **Special methods**
High-resolution transmission electron microscopy, ultrahigh voltage transmission electron microscopy including in situ *electron microscopy, transmission electron microscopy for analysis.*

6309 **Image acquisition, image processing, image simulation.**

6310 **Secondary-electron scanning electron microscopy including electron-beam microanalysis in general.**

6311 **Conferences, publications series**

6312 **Applications to semiconductor technology.**

6313 **Applications to materials science and materials testing,** *(besides semiconductor technology).*

6314 **Electron-beam microanalysis**

6315 **Specific methods (low-voltage scanning electron microscopy, scanning electron microscopy under ambient conditions, *in situ* scanning electron microscopy.**

6320 **Scanning probe microscopy in general,** *including scanning tunnelling (electron) microscopy and atomic force microscopy.*
Secondary-electron scanning electron microscopy, cf. UH 6310

6330 **Field emission microscopy, field-ion microscopy.**

6340 **Secondary-electron microscopy**

6350 **Photoelectron emission microscopy (PEEM)**

6400 **Radiography, microradiography, X-ray optics in general.**

6600 **Cherenkov radiation**

6650 **Synchrotron radiation, cyclotron radiation and applications, e.g. X-ray lithography.**

6700 **Instrumental optics and the physics of optical instruments in general, optical microscopy, flash and gas-discharge lamps, optical materials, sol-gel optics.**
Infrared und far-infrared optics, cf. UH 5900; astronomical instruments cf. US 1480; optical components, apparatus and systems cf. ZS 4500.

6710 **Optical materials**

6900 **Photometry, colourimetry in general.**

7000 **Photography in general, theory of photographic apparatus, high-speed photography, electrophotography.**
Infrared photography cf. UH 5965.

7200 **Physiological optics.**
Optical information processing in the eye, optical illusions, visual persistence effects.

7400 **Colour theory, colourimetry including measurement apparatus.**

7500 **Optical signal processing, optical computers, optical data storage.**

7600 **Other topics related to optics and quantum optics,** *e.g. remote sensing, LIDAR.*

8000 - 8700 **Relativity theories**

8000 **Introduction**

8200 **Theory of special relativity**

8300 **Theory of general relativity**

8500 **Gravitation theory**

8700 **Gravitational waves, gravitons, gravitational lenses, experimental detection of gravitational waves, detectors, optical gyroscopes, interferometers for graviton detection, etc.**

UK Quantum theory, quantum mechanics

1000 Quantum theory, general non-relativistic quantum physics
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for quantum mechanics
1070 Tables
1090 Complete publications series
1100 Conferences, symposia, summer schools on quantum theory, quantum mechanics
- 1199.99 *(Ordered by the last two numbers of the year of the conference).*
1100 - 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 for 2000 - 2099
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*
1200 Physical and mathematical fundamentals of quantum mechanics
1250 Theory of the measurement process
1300 Historically important works. Original literature, textbooks on early quantum mechanics.
1400 Relativistic quantum theory
1400a Philosophical problems of quantum mechanics, cf. UB 7000.
2000 - 7800 Specific methods in quantum mechanics
2000 General survey, overview
3000 Applications of group theory in quantum mechanics, operator algebras.
3500 Angular momentum in quantum mechanics
For rotational motion, torque cf. UF 1950.
4000 Approximation methods in quantum mechanics
4500 Integrals, path integrals
7500 Quantum theory of scattering
7500a Non-relativistic quantum theory of many-body systems, cf. UL 1000.
7600 Quantum chaos
7800 Compton effect, photoeffect, pair production, interactions of gamma radiation with matter.
For quantum field theory and renormalisation theory cf. UO 4000; for quantum electrodynamics cf. UO 5600; quantum liquids cf. UR 2000; for quantum optics cf. UH 5600 ff.

UL MANY-BODY THEORY UL (page heading)

UL Many-body theory

1000 Non-relativistic quantum theory of many-body systems
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for many-body theory
1070 Tables
1090 Complete publications series
1100 Conferences, symposia, summer schools on many-body theory
- 1199.99 *(Ordered by the last two numbers of the year of the conference).*
1100 - 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 for 2000 - 2099
- 1199.99 *(Ordered by the last two numbers of the year of the conference).*
2000 Many-body methods in quantum statistics.
3000 Specific applications of many-body methods.
3100 Integrable systems
4000 Systems of interacting fermions
(see also UP 3600).
5000 The three-body problem.
6000 The many-body problem.

UM ATOMIC UND MOLECULAR PHYSICS UM (page heading)

UM Atomic and molecular physics

1000 General overview
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for atomic and molecular physics
1070 Tables
1090 Complete publications series
1100 Conferences, symposia, summer schools on atomic and molecular physics.
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*
1100 - 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 for 2000 - 2099
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*
1200 Electronic structure of atoms and molecules,
general theory of electronic transitions, special computational methods and results, statistical model calculations, semi-empirical calculations.
1300 Corrections to electronic structure calculations*;*
Hyperfine interactions, isotope effect, radiation corrections and relativistic effects.
1400 Experimentally-derived information on atoms and molecules, instruments and methods.
1500 Other topics
2000 - 2900 Atomic physics
2000 General overview
2100 Particular instruments and methods in atomic physics; experiments and instruments.
Mass spectrometers cf. UM 3120; atomic beam and ion-beam optics, cf. UH 6200.
2110 Atomic masses, isotopes, mass spectra, isotopic abundances.
2130 Electrical and magnetic moments
2140 Polarisability and ionisability, cf. UM 2500.
2160 Specific atoms and ions, exotic atoms

2200 - 2590 Spectroscopic investigations of atomic structure and atomic spectra.

2200 General topics

2220 Radiofrequency spectra
Radioastronomy and communications technology (see also UX 2500).
(See also US 1650).

2240 Microwave spectra,
Communications technology, radio frequencies.
(See also UX 2500).

2260 Infrared spectra,
Infrared detectors, infrared spectroscopy and infrared optics, cf. UH 6000.
(See also UP 3100, UX 2150).

2265 Visible spectral range.

2280 X-ray spectra, X-rays in general, X-ray imaging
Fluorescence cf. UH 5870; phosphorescence cf. UH 5860;
quenching processes, cf. UH 5870.
(See also UQ 5600).

2300 Zeeman and Stark effects

2350 Intensities and shapes of atomic spectral lines, general.
Oscillator strengths, transition moments, lifetimes, absolute and relative intensities, line shapes, line widths and line shifts.

2400 Interactions of photons with atoms.
For level crossings and optical pumping cf. UH 5680.

2500 Ionisability of atoms in general, ionisation potentials.
For specific ions cf. UM 2160; ion-beam experiments cf. UM 5000.

2510 Autoionisation

2520 Photoionisation

2530 Auger effect and ionisation of inner shells, Auger spectroscopy.

2550 Multiphoton processes

2590 Other aspects of the ionisation of atoms

2900 Other topics in atomic physics

3000 - 6000 Molecular physics

3000 General overview

3100 Particular instruments and methods in molecular physics.

3110 General molecular shapes and symmetries,
Stereochemistry, intermolecular spacing and angles, bond strengths, dissociation energies, hydrogen bonding, barrier heights, rotational energy cf. VE 9300.
(See also Crystallography under UQ 1000 ff.)

3120 Molecular masses, mass spectra, mass spectroscopy, model calculations of molecules, LCAO method.
(See also atomic and molecular physics in general.)

3130 Electric and magnetic moments

3140 Polarisability and magnetic susceptibility;
Ionisability, ionisation potentials, electron affinities, molecular core-level binding energies cf. UM 4500.

3150 Correlation times in molecular dynamics

3160 Types of molecules, specific molecules

3165 Diatomic molecules

3170 Triatomic molecules

3175 Tetratomic molecules

3180 Pentatomic molecules

3181 Clusters, general

3185 Polyatomic molecules

3190 Radicals

3195 Ions

3200 - 6000 Spectroscopic investigations of molecular structure and molecular spectra.

3200 General overview

3220 Radiofrequency spectra
See also radioastronomy, US 1650; communications technology, ZN 6000 - ZN 6570.

3240 Microwave spectra
See also communications technology, ZN 6000 - ZN 6570.

3260 **Infrared spectra, infrared spectroscopy and infrared optics cf. UH 6000.**
(See also infrared detectors UP 3100, ZN 6297).

3265 **Visible spectra**

3270 **Ultraviolet spectra**

3280 **X-ray spectra,**
Fluorescence cf. UH 5870; phosphorescence cf. UH 5860; quenching processes cf. UH 5870.
(See also X-ray spectroscopy, UQ 5600).

3300 **Raman spectra, Raman spectroscopy in general**

3400 **Rayleigh spectra**

3500 **Nuclear magnetic resonance and relaxation (NMR), NMR spectroscopy in general.**

3600 **Nuclear quadrupole resonance (NQR)**

3700 **Electron paramagnetic resonance (EPR) and relaxation.**

3800 **Double resonances and other multiple resonance methods;**
Mossbauer spectroscopy in general, cf. UP 9500.

4000 **Photoelectron spectra**
Relaxation of excited molecular fluorescence cf. UH 5870; phosphorescence cf. UH 5860; radiationless transitions (see also UH 5600 ff); quenching processes cf. UH 5870.
(See also UH 5600 ff).

4100 **Charge-transfer spectra**

4200 **Intensities and shapes of molecular spectral lines and bands, general.**

4250 **Oscillator and band strengths, transition moments and Franck-Condon factors.**

4300 **Lifetimes, absolute and relative line and band intensities.**

4350 **Line and band widths, shapes and shifts.**

4500 **Ionisation and autoionisation, predissociation, photodissociation, photoionisation.**

5000 **Atomic and molecular-beam experiments. Ion-beam experiments.**

6000 **Other topics in molecular physics, e.g. rearrangements.**

UN Nuclear physics

1000 General overview, textbooks
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for nuclear physics
1070 Tables
1090 Complete publications series
1100 Conferences, symposia, summer schools on nuclear physics
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*
1100 - 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 for 2000 - 2099
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*

1200 - 1800 Nuclear structure
1200 General overview
1210 - 1300 Properties of nuclei, properties of nuclear energy levels
1210 Binding energies and masses
1220 Shape, charge and radius of nuclei
1230 Spin, parity and isospin
1240 Spectroscopic factors
1250 Electromagnetic moments
1260 Level density and structure
1270 Single-particle spectra
1280 Collective excitations.
(See also UN 2550, UN 3300).
1300 Coulomb effects
(See also UN 2000).
1350 Other aspects of nuclear structure
1400 Nuclear forces, nucleon-nucleon interactions
(See also UO 5300).
1410 Meson theory
1420 Phenomenological theories
1450 Systems of a few nucleons

1500 - 1580 Nuclear structure models and calculation methods
1500 General overview
1510 Shell models
1520 Collective models, Droplet model.
1530 Models based on group theory
1540 Cluster models
1550 The Hartree-Fock and PPA approximations
1555 The density-functional method
1560 Pairing correlations, BCS and HFB theory.
(See also UP 2200 for applications to solid-state problems).
1570 Other models
1580 Nuclear matter (theory and calculations)
1600 Hadronic atoms and molecules.
(See also UM 2160, UM 3160).
1700 Hypernuclei
1800 Superheavy elements,
Nuclear decays cf. UN 2010, 2110, 3500, 3600.

1900 Radioactivity, general

2000 - 2110 Electromagnetic and weak interactions of nuclei
2000 General overview
2010 Electromagnetic transitions
2020 Lifetimes and transition probabilities
2030 Angular distribution and correlation measurements
2040 Multipole mixing ratios
2050 Multipole matrix elements
2060 Multipole transitions and level energies
2070 Internal conversion

2100 **Electron and muon capture**
2110 **Weak interactions and leptonic decays, nuclear matrix elements and nuclear structure.**

2500 - 2595 Nuclear reactions and nuclear scattering.
For nuclear fission, cf. UN 3500; for nuclear decays cf. UN 3600.

2500 General overview
2510 **Models for nuclear reactions and nuclear scattering**
2520 **The coupled-channel method; many-body theoretical methods**
2530 **The Born approximation and DWBA**
2540 **Optical models**
2550 **Resonance reactions and scattering; giant resonances**
2560 **Isobaric analogue resonances**
2570 **Direct reactions and scattering**
2580 **Statistical theory and fluctuations**
2590 **Polarisation in reactions and scattering**
2595 **Other topics in general nuclear reactions and nuclear scattering**

3000 - 3010 Specific nuclear reactions and nuclear scattering
3000 **General overview**
3010 **Nuclear reactions and scattering in systems of only a few nucleons.**
3020 **Photonuclear reactions and photon scattering (except fission).**
3030 **Lepton-induced reactions (except fission and scattering).**
3040 **Electron and positron scattering,**
For electron scattering in solids, cf. UP 9320.
3050 **Muon scattering**
3060 **Neutrino scattering**

3100 **Nucleon-induced reactions (except fission and scattering).**
(See also neutron physics, UP 2000).
3110 **Elastic proton scattering,**
Elastic neutron scattering cf. UP 2000.
3120 **Inelastic proton scattering and (p, n) reactions**
3130 **Inelastic neutron scattering**
3140 **Nucleon transfer reactions**
3150 **Radiative capture**

3200 **Reactions with light ions**
3210 **Reaction mechanisms, general**
3220 **Nucleon transfer reactions**

3300 **Heavy-ion-induced reactions (except fission and scattering).**
3310 **Reaction mechanisms, general**
3320 **Nucleon transfer reactions**
3330 **Matter und collective aspects of heavy-ion reactions**
3340 **Elastic, inelastic and charge-transfer reactions**
3350 **Coulomb excitation**
3360 **Deep-inelastic heavy-ion scattering**
3370 **Relativistic heavy-ion scattering.**
(See also UO 2700).

3400 **Meson- and hyperon-induced reactions and scattering**
3410 **Elastic and inelastic pion-nucleus scattering**
3420 **Reactions with kaons and hyperons**
3430 **Other reactions in the medium energy range**

3500 - 3600 Nuclear fission
3500 **General overview**
3510 **Spontaneous nuclear fission**
3520 **Neutron-induced nuclear fission**
3530 **Nuclear fission induced by charged particles.**
3540 **Photon-induced nuclear fission.**
3550 **Heavy-ion-induced nuclear fission.**

3600 **Nuclear decay**

3700 **Other individual nuclear reactions.**

4000 Properties of specific nuclei,
Ordered according to the Gmelin reference numbers.

4000.0 ***Noble gases***
- **4001 He Helium**
- **4002 Ne Neon**
- **4003 Ar Argon**
- **4004 Kr Krypton**
- **4005 Xe Xenon**
- **4006 Ra Radon**

4007 H Hydrogen
4008 O Oxygen
4009 N Nitrogen

4009.0 ***Halogens***
- **4010 F Fluorine**
- **4011 Cl Chlorine**
- **4012 Br Bromine**
- **4013 I Iodine**
- **4014 At Astatine**

4015 S Sulphur
4016 Se Selenium
4017 Te Tellurium
4018 Po Polonium
4019 B Boron
4020 C Carbon
4021 Si Silicon
4022 P Phosphorus
4023 As Arsenic
4024 Sb Antimony
4025 Bi Bismuth

4026.0 ***Alkali elements***
- **4026 Li Lithium**
- **4027 Na Sodium**
- **4028 K Potassium**
- **4029 NH_4 Ammonium**
- **4030 Rb Rubidium**
- **4031 Cs Caesium**
- **4032 Fr Francium**

4032.0 ***Alkaline-earth elements***
- **4033 Be Beryllium**
- **4034 Mg Magnesium**
- **4035 Ca Calcium**
- **4036 Sr Strontium**
- **4037 Ba Barium**
- **4038 Ra Radium**

4039 Zn Zinc
4040 Cd Cadmium
4041 Hg Mercury
4042 Al Aluminium
4043 Ga Gallium
4044 In Indium
4045 Tl Thallium

4045.0 ***Rare Earths***
4046 Sc Scandium
4047 Y Yttrium

4048 La Lanthanum ***and lanthanide elements***
4049 Ce Cerium
4050 Pr Praseodymium
4051 Nd Neodymium
4052 Pm Promethium
4053 Sm Samarium
4054 Eu Europium
4055 Gd Gadolinium
4056 Tb Terbium

4057 **Dy Dysprosium**
4058 **Ho Holmium**
4059 **Er Erbium**
4060 **Tm Thulium**
4061 **Yb Ytterbium**
4062 **Lu Lutetium**
4062.0 ***Transition and actinide elements***
4063 **Ac Actinium**
4064 **Ti Titanium**
4065 **Zr Zirconium**
4066 **Hf Hafnium**
4067 **Th Thorium**
4068 **Ge Germanium**
4069 **Sn Tin**
4070 **Pb Lead**
4071 **V Vanadium**
4072 **Nb Niobium**
4073 **Ta Tantalum**
4074 **Pa Protactinium**
4075 **Cr Chromium**
4076 **Mo Molybdenum**
4077 **W Tungsten**
4078 **U Uranium**
4079 **Mn Manganese**
4080 **Ni Nickel**
4081 **Co Cobalt**
4082 **Fe Iron**
4083 **Cu Copper**
4084 **Ag Silver**
4085 **Au Gold**
4085.0 ***Platinum metals***
4086 **Ru Ruthenium**
4087 **Rh Rhodium**
4088 **Pd Palladium**
4089 **Os Osmium**
4090 **Ir Iridium**
4091 **Pt Platinum**
4092 **Tc Technetium**
4093 **Re Rhenium**
4093.0 ***Transuranic elements***
4094 **Np Neptunium**
4095 **Pu Plutonium**
4096 **Am Americium**
4097 **Cm Curium**
4098 **Bk Berkelium**
4099 **Cf Californium**
4100 **Es Einsteinium**
4101 **Fm Fermium**
4102 **Mv Mendelevium**
4103 **No Nobelium**
4104 **Lr Lawrencium**

5000 – 5700 **Nuclear technology and nuclear energy**
Neutron physics cf. UP 2000
5000 **General overview**
5100 **Reactor technology, general**
5110 - 5130 **Theory and construction of nuclear reactors**
5110 **Materials for nuclear reactors**
5120 **Cooling and heat recovery**
5130 **Experiments with nuclear reactors**
5200 **Operation of nuclear reactors, general**
5210 **Reactor control and regulation**
5220 **Reactor safety**

5230 **Manufacture and reprocessing of fuel elements**
5240 **Waste disposal, radioactive waste**
5300 **Specific types of reactors, reactor applications**
5310 **Research reactors**
5320 **Fast reactors and breeder reactors**
5330 **Power reactors**
5340 **Propulsion reactors**
5350 **Backup generators and electrical drives**
5360 **Nuclear power plants**
5370 **Desalination plants;**
Coal gasification plants cf. UX 2000; fusion reactors cf. UR 9000.
5400 **Other topics in reactor technology**
5500 **Isotope separation and enrichment in general**
5510 **Thermal diffusion separation tubes**
5520 **Gas-dynamic processes**
5530 **Ultracentrifuges**
5530a **Laser processes cf. UH 5775**
5600 **Nuclear explosions, nuclear explosives in general**
5650 **Radiation technology incl. shielding**
5700 **Other topics in nuclear technology**

6000 Experimental methods and equipment for nuclear physics, general.
6100 - 6250 **Particle accelerators**
6100 **General overview**
6110 **Pre-accelerators (beam injection)**
6120 **Electrostatic accelerators**
6130 **Linear accelerators**
6150 **Oscillating-field accelerators and storage rings in general**
6160 **Betatrons**
6170 **Cyclotrons**
6180 **Synchrocyclotrons**
6190 **Synchrotrons**
6200 **Other oscillating-field accelerators**
6250 **Storage rings**
6300 **Plasma accelerators**
6400 **Particle sources and targets: Construction and technology.**
(See also molecular-beam and ion-beam experiments UM 5000).
6410 **Electron sources**
(See also electron optics UH 6300).
6420 **Ion sources for positive, negative and polarised ions.**
6430 **Neutron sources**
6440 **Radioactive sources**
6500 **Beam optics, beam focussing, pulsed beams**
6600 **Nuclear targets in general; polarised targets**
6700 **Spectroscopy of particle beams in general.**
(See also molecular-beam and ion-beam experiments UM 5000).
6710 **Spectroscopy of heavy charged particles**
6720 **Neutron spectroscopy, mass spectroscopy, cf. UM 3120.**
(See also neutron physics UP 2000).

7000 – 7900 **Detection and measurement of radioactivity and particle emissions.**
7000 **General overview**
7100 **Dosimetry in general (including film dosimetry)**
7200 **Radiation detectors, general**
7210 **Ionisation chambers**
7220 **Cloud chambers**
7230 **Bubble chambers**
7240 **Spark chambers and other track-imaging detectors**
7250 **Cherenkov detectors**
7260 **Scintillation detectors**
7260a **Semiconductor detectors cf. UP 3100**
7270 **Nuclear emulsions**
7280 **Geiger counters**
7290 **Position-sensitive detectors.**

7300 **Detection circuits and nuclear electronics.**
7310 **Angular correlation measurements.**
7320 **Coincidence measurements.**
7330 **Energy loss and energy-range relations.**
7340 **Integral methods of radiation detection.**
(See also dosimetry UN 7100).
7350 **Polarisation analysis.**
7900 **Radiological protection.**

UO Elementary-particle physics, physics of fields and high-energy physics

1000 - 1199.99 Elementary particles and fields

1000 General overview
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for elementary-particle physics
1070 Tables
1090 Complete publications series
1100 - 1199.99 Conferences, symposia, summer schools on the entire field
(*Ordered by the last two numbers of the year of the conference).*
1100 – 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*
1199.00 for 2000 - 2099
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*

1500 – 1590 Symmetry properties and conservation laws in the realm of elementary particles and fields.

1500 General overview
(See also group theory UK 3000 and SK 260).
1510 Lorentz and Poincaré invariance
1520 Parity, charge conjugation, time reversal and other discrete symmetries.
1530 SU(2) and SU(3) symmetries
1540 SU(4) symmetry and other inner and higher symmetries.
1550 Nonlinear and dynamic symmetries, spectrum-generating symmetries.
1560 Supersymmetry
1570 Spontaneous symmetry breaking
1580 Chiral symmetry
1590 Other topics in symmetries and conservation laws.

2000 Scattering theory and S matrix theory in general; the scattering matrix and perturbation theory.

2500 Dispersion relations and analytic properties of the S matrix.

2600 - 2650 Dispersion relations and sum rules

2600 General overview
2610 N/D method
2620 Bootstrap models
2630 Crossing symmetries
2640 Sum rules
2650 Multivariable dispersion relations, Mandelstam representation.

2700 – 2760 Relativistic scattering theory

2700 General overview
2710 Kinematic properties, helicity and invariant amplitudes, kinematic singularities.
2720 Partial-wave analysis
2730 Approximations, eikonal approximation, variational principles.
2740 Multichannel scattering
2750 Many-body problems, Fadeev equation.
2760 Multiple scattering

2800 – 2820 Spin and isospin

2800 General overview
2810 Complex angular momentum.
2820 Regge formalism, Regge poles.

3000 - 3090 Currents and their properties, current algebras.

3000 General overview
3010 Lagrange representation of current algebras.
3020 Partially-conserved axial vector current (PCAC)
3090 Other topics relating to currents

4000 - 4100 Field theory and quantum field theory.

4000 General overview
4010 Axiomatic representation

4020 Lagrange and Hamilton representations, renormalisation.
4030 Asymptotic problems and properties.
4040 Nonlinear or nonlocal theories and models.
4050 Schwinger's source theory
4060 Gauge field theories
4065 Strings in general, superstring theories, string field theories.
4070 Relativistic wave equations
4080 Bound and unstable states, Bethe-Salpeter equation.
4090 Other topics
4100 Fractional statistics and anyons.

5000 - 5590 Theory and phenomenology of the interactions of elementary particles.
5000 General overview
5100 - 5190 Phenomenology of the weak interaction
5100 General overview
5110 Models of the weak interaction
5120 Neutral currents
5130 Intermediate vector bosons
5140 Neutrino interactions
5150 Leptonic and semileptonic decays of mesons in general.
5160 Lepton decays
5170 K decays, CP parity (charge conjugation and parity violation).
5175 Decay of mesons with strangeness (strange meson decays).
5180 Decay of mesons with charm (charmed meson decays).
5185 Decay of B mesons (bottom meson decays).
5190 Baryon decays, leptonic and semileptonic decays.
5200 General phenomenology of the electromagnetic interaction, electromagnetic properties of the hadrons.
5210 Electromagnetic mass differences
5220 Electromagnetic form factors; electric and magnetic moments.
5230 Electromagnetic decays
5240 Electromagnetic corrections to processes with strong and weak interactions.
5300 - 5490 Phenomenology of the strong interaction
(See also UN 1400).
5300 General overview
5310 General models of the strong interaction
5312 Nucleon-antinucleon interactions
5315 Pion-nucleon interactions
5320 Models of hadronic structure
5330 Hadron properties
5340 Statistical models
5350 Bootstrap models
5360 Dual models and duality
5370 Hadron classification schemes
5380 The plane of complex angular momentum
5390 Absorption models, optical models and Eikonal models
5400 Potential models
5410 Peripheral models (single and multiparticle exchange)
5420 Multiperipheral and multi-Regge models, Regge poles.
5430 Vector meson dominance
5490 Other phenomena of the strong interaction

5500 - 5590 Theories of the weak interaction
5500 General overview
5510 Gauge theories of the electroweak interactions.
5520 Weinberg-Salam theory
5590 Other theories

5600 - 5690 Quantum electrodynamics
5600 General overview
5610 Specialised calculations and limiting cases of quantum electrodynamics.
5620 Experimental tests of quantum electrodynamics.
5690 Other topics in quantum electrodynamics.

5700 Quantum chromodynamics in general. Theory of the strong interaction.
5710 Symmetries of the quarks, quark phenomenology.
5720 Quark-gluon dynamics, quark-gluon plasma.

5730 **Field-theoretical basis of quantum chromodynamics, Yang-Mills theories.**
5740 **Applications of quantum chromodynamics; structure of the hadrons; strong interactions.**
5790 **Other topics in quantum chromodynamics**
5800 **Unified gauge field theories. Unified field theories.**
5900 **Gravitational interaction**
(See also theory of general relativity, UH 8000).
6000 **Properties of individual elementary particles and resonances in general.**
6100 - 6190 **Baryons and baryon resonances including antiparticles.**
6100 **General overview**
6110 **Neutrons**
6120 **Protons, antiprotons**
6130 **Baryon resonances with S=0**
6140 **Hyperons and hyperon resonances**
6190 **Others**
6200 - 6290 **Mesons and meson resonances**
6200 **General overview**
6210 **K mesons**
6220 **A and B mesons**
6230 **Mesons and charm**
6290 **Other mesons**
6300 - 6390 **Leptons**
6300 **General overview**
6310 **Electrons**
6320 **Positrons**
6330 **Muons, muon spin resonance**
6340 **Neutrinos**
6390 **Other leptons**
6400 - 6490 **Other particles, hypothetical particles;**
quarks cf. UO 5200.
6400 **General overview**
6420 **Bosons**
6430 **Magnetic monopoles**
6440 **Photons**
6450 **Tachyons**
6450a **Excitons, plasmons, polarons cf. UP 3700.**
6490 **Other topics.**
6490a **Particle accelerators: cf. UN 6100.**
9500 **Cosmic rays.**

UP

1000 - 5600 Solid-state physics

1000 Textbooks

1020 Compendia, lectures, reviews

1030 Specialised dictionaries and encyclopaedias

1050 Collections of exercises for solid-state physics

1070 Tables

1090 Complete publications series

1100 Conferences, symposia, summer schools on solid-state physics

- 1199.99 (*Ordered by the last two numbers of the year of the conference).*

1100 - 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference).*

1199.00 for 2000 - 2099

- 1199.99 (*Ordered by the last two numbers of the year of the conference).*

1200 Group theory in solid-state physics (finite groups only).
See also crystallographic group theory, UQ 1350; applications in quantum mechanics, UK 3000; abstract classical group theory, SK 260; topological groups cf. UK 3000 and SK 340.

1300 Other mathematical methods relating to solid-state physics, e.g. gauge field theories, many-body theory.

1400 Tunnel effect and tunnel spectroscopy in general.
Electron tunnelling spectroscopy cf. UH 6320.

1410 Josephson effect

1420 Proximity effect

1500 Lattice dynamics, phonons in general, crystal statistics.

1500a Phase transitions cf. UG 3800; phase diagrams cf. UQ 3300.

1800 Ultrasound, general

2000 Neutron physics, neutron spectroscopy.
Spectroscopic investigations of atomic structure: cf. UM 1200.

2100 Theory of lattice defects (dislocations, point defects),
relating to crystal growth: cf. UQ 2400 – 2440;
relating to plasticity, elasticity of crystals, cf. UQ 4100.

2200 Superconductivity in general, two-fluid model, particular high-temperature superconductors, BCS theory.
(See also liquid and solid hydrogen, UR 2900) (see also He-3 and He-4, UR 3000).
(See also quantum liquids in general, UR 2000).

2300 Low-temperature physics, low-temperature technology, cf. UX 3300.
(See also UR 2000 ff).

2500 High-pressure physics in general and the behaviour of solids and liquids at high pressures and under extreme conditions.

2800 - 3500 Semiconductor physics, semiconductor theory

2800 General overview

2850 Exercises for semiconductor physics

2900 Tables for semiconductor physics

3000 Ion implantation in semiconductors

3050 Optical properties of semiconductors.
Semiconductor lasers cf. UH 5616.
(See also quantum optics and quantum electronics, UH 5600 ff).

3100 Semiconductor materials.
See also ZN 3460.

3110 Elemental semiconductors

3120 Compound semiconductors

3130 Organic semiconductors

3140 Particular semiconductors

3150 Structured semiconductors, multilayers, superlattices, heterostructures and quantum troughs, quantum wells.
(See also thin films, UP 7500 ff).

3160 Amorphous semiconductors and polycrystalline semiconductors.

3200 Transport processes in semiconductors; Gunn devices, Gunn effect.

3250 Semiconductor doping, radiation effects in semiconductors.

3300 **Physics of ionic crystals.**
Colour centres cf. UP 8300; Colour-centre lasers cf. UH 5618.

3400 **Physics of the transition metals.**

3500 **Crystal field theory, ligand field theory.**
Applications in mineralogy cf. UQ 4200.

3600 - 4400 Electronic states in solids

3600 **General topics including Fermion systems, heavy Fermion systems, strongly correlated electron systems, Anderson model.**

3650 **Electronic solid-state plasma**

3700 **Quasiparticles in solids and their interactions in general.**

3710 **Excitons and related phenomena including electron-hole pairs.**

3720 **Polaritons and photon-photon interactions; photon-magnon interactions.**

3725 **Polarons and the electron-phonon interaction.**

3735 **Magnons**

3740 **Plasmons**

3745 **Other quasiparticles;**
Solitons: see under the corresponding wave phenomena.

3750 **Jahn-Teller effect**

3760 **Valence fluctuations**

4000 **Band-structure calculations, LCAO method, Kondo lattice**

4100 **Determination of the Fermi surface incl. De-Haas-van-Alphen effect, cyclotron resonance, Shubnikov-de-Haas effect.**

4200 **Electronic states in amorphous materials.**
Amorphous semiconductors cf. UP 3160.

4400 **Positron annihilation in solids;**
Surface electronic states cf. UP 7500.

4500 - 5500 Electrical properties, solids in external fields.

4500 **General overview**

4600 **Dielectric properties, dielectrics, insulators.**

4610 **Metal-insulator transitions.**
(See also UP 7500 ff).

4700 **Ferroelectricity, ferroelectrics, electrets.**

4900 **Piezoelectric materials**

5000 **Electrical conductivity in solid-state physics.**
Thin films cf. UP 7750; electrical conductivity in general cf. UH 3500; transport theory in general cf. UG 2300.

5010 **Band conductivity e.g. in crystals, not amorphous, not localised.**

5020 **Localised states, including amorphous conductors.**
Amorphous semiconductors cf. UP 3160; amorphous thin layers and films cf. UP 7750; polymers cf. UV 5200.

5050 **Low-dimensional conductors, 1- and 2-dimensional conductors, fibre structures, thin wires.**

5060 **Hopping conductivity**

5070 **Ion transport and diffusion in solids, solid electrolytes, super-ionic solids.**

5070a **Noise and fluctuations cf. UG 3700.**

5100 **Galvanomagnetic effects, thermomagnetic effects, thermoelectric effects.**

5110 **Hall effect and quantum Hall effect, photo Hall effect.**

5200 **Heat conductivity**

5300 **Photoconductivity, photoresistance**

5400 **Thermoelectricity**

5450 **Photoemission;**
Photoeffect cf. UP 8200.

5500 **Electron emission, field emission;**
Field emission spectroscopy cf. UH 6330.

6000 - 6900 Magnetism

6000 **General overview**

6050 **Collections of exercises**

6070 **Tables, tabulations**

6100 **Diamagnetism**

6200 **Paramagnetism**

6300 **Ferro-, ferri- and antiferromagnetism**

6400 **Magnetism of thin films.**
(See also thin films, UP 7500 ff).

6500 **Magnetism and chemical bonding**

6700 **Spin waves, spin fluctuations, spin temperatures, spin-glass theory, Heisenberg spin-glass model, spin-lattice relaxation.**
General theories of systems with spins and pseudospins cf. UG 2000.

6800 **Magnetic materials and their technology, magnetic bubbles, spin glasses.**

6900 **High magnetic fields and their technology; high-temperature superconductors cf. UP 2200.**

7500 - 7990 Physics of thin films and interfaces

7500 **General overview**

7550 **Preparation of thin films incl. epitaxial films, thin-film technology.**
Epitaxy in general, cf. UQ 2200.

7560 **Metallic thin films, metal-semiconductor contacts.**

7570 **Semiconductor thin films**

7580 **Amorphous films, incl. amorphous semiconductor films.**
Polymer films and interfaces cf. UV 7000.

7590 **Multilayer structures.**
Two-dimensional lattices, superlattices and heterostructures cf. UP 3150. Magnetism of thin films cf. UP 6400.

7610 **Solid-solid interfaces**

7620 **Solid-liquid interfaces**

7630 **Solid-gas interfaces**

7640 **Liquid-liquid interfaces**

7700 **Specific properties of thin films and interfaces.**

7750 **Conductivity of thin films**

7800 **Optical properties of thin films.**
Ellipsometry cf. UP 8300; optical filters cf. UH 5400.

7900 **Other topics on the physics of thin films and interfaces, e.g. adhesion, diffusion.**

8000 - 9500 Optical properties, optical interactions

8000 **General overview**
Optical properties of thin layers and films cf. UP 7800; luminescence, fluorescence, phosphorescence cf. UH 5860 ff; in polymers, cf. UY 5500.

8200 **Photoeffect, photoemission cf. UP 5450.**

8300 **Optical properties of impure crystals; colour centres including absorption, reflection, ellipsometry.**

9000 **Solid-state spectroscopy, light scattering in solids.**
Dispersion in general cf. UH 5300.

9100 **Applications of infrared spectroscopy in solid-state physics;**
general treatment cf. UH 6000 ff.

9150 **UV and VUV spectroscopy in solid-state physics.**

9200 **Raman spectroscopy in solid-state physics;**
X-ray spectroscopy cf. UQ 5600,

9250 **Auger spectroscopy**

9270 **Brillouin spectroscopy; see also nonlinear optics, UH 5690.**

9300 **Scattering processes of electrons, ions and molecules with solids, secondary ion emission spectroscopy.**

9310 **EXAFS (extended X-ray absorption fine structure).**

9320 **LEED (low energy electron diffraction) including electron scattering and diffraction.**
Electron scattering in nuclear physics cf. UN 3040.

9330 **XPS (X-ray photoelectron spectroscopy) including ESCA (electron spectroscopy for chemical analysis), UPS (ultraviolet photoelectron spectroscopy).**

9340 **ESR (electron spin resonance spectroscopy), ESEEM (electron spin-echo envelope modulation spectroscopy).**

9350 **Ion implantation in general, etching, sputtering.**
(See also UP 3000).

9400 **NMR (nuclear magnetic resonance spectroscopy).**

9410 **NMR tomography**

9500 **Mossbauer effect and Mossbauer spectroscopy;**
(In nuclear physics, cf. UN 2200).

UQ

1000 – 5600 Crystallography

1000 **Textbooks on crystallography and mineralogy.**
1020 **Compendia, lectures, reviews**
1030 **Specialised dictionaries and encyclopaedias**
1050 **Collections of exercises for mineralogy and crystallography.**
1070 **Tables**
1090 **Complete publications series**
1100 **Conferences, symposia, summer schools on crystallography, mineralogy.**
- 1199.99 (*Ordered by the last two numbers of the year of the conference).*
1100 – 1199 **for 1900 – 1999**
(*Ordered by the last two numbers of the year of the conference).*
1199.00 **for 2000 - 2099**
-1199.99 (*Ordered by the last two numbers of the year of the conference).*
1200 **Geometric crystallography**
1220 **Drawing crystals**
1225 **Atlases of crystal forms**
1250 **Stereographic projection**
1300 **Crystal symmetry**
1350 **Crystallographic group theory**
1800 ***Indiv. signum*: American Crystallographic Association Transactions**
2000 - 2800 Crystal growth, crystallisation
2000 **General overview**
2100 **Crystal growth from the melt; melting and solidification.**
2120 **Crystal growth from flux melts; molten salts.**
2140 **Crystal growth from solution; solution processes.**
2150 **Hydrothermal synthesis**
2160 **Crystal growth from the gas phase; evaporation processes.**
2180 **Whiskers**
2200 **Epitaxy**
2220 **Electrocrystallisation**
2220a **Polymer crystallisation cf. UV 3600.**
2300 **Physical-chemical crystallography, reactivity of solids.**
2400 **Imperfections, defects, growth defects.**
2410 **Radiation damage and specific materials.**
2420 **Twinning**
2440 **Dislocations**
2460 **Non-stoichiometry**
2500 **Order-disorder**
2600 **Diffusion processes in crystals and metals (including adsorption).**
2700 **Purification methods and highly pure substances.**
2800 **Crystal surface treatment; polishing, etching.**
3000 - 3600 Chemical crystallography, crystal chemistry, structural chemistry.
3000 **General overview**
3100 **Chemical bonding in crystals**
3200 **Crystal chemistry of specific materials groups**
3300 **Phase diagrams**
3400 **Crystal structure and phase transformations, polymorphism, polytypism.**
3500 **Differential thermal analysis**
3600 **Specific physical-chemical methods.**
4000 - 4640 Crystal physics
4000 **General overview**
4100 **Plasticity and elasticity of crystals**
4200 **Mineralogical applications of crystal field theory;**
Crystal field theory in general, cf. UP 3500.
4300 **Thermal properties, thermal expansion.**
4500 **Crystal optics, polarisation and light microscopy of crystals.**
4600 **Crystal optics tables**
4620 **Handbooks of microscopy for technological applications.**
4640 **Atlases of optical phenomena.**
5000 - 5600 Crystal structure determination

5000 General overview
5050 Tables of crystal structures (excluding metals).
5100 Textbooks on crystal structure determination and X-radiography.
5200 Crystal structure determination in particular materials groups.
5300 Mathematical methods in crystal structure determination.
5400 Powder methods
5500 Electron-diffraction methods
5550 Neutron-diffraction methods
5600 X-ray spectroscopy, X-ray microscopy, X-ray fluorescence spectroscopy and analysis.

UQ MINERALOGY UQ (page heading)

UQ

6000 - 6800 Mineralogy
6000 - 6040 General overview
6010 Reference works, bibliographies and dictionaries.
6020 Relationship of mineralogy to other fields.
6030 History of mineralogy
6040 Conferences, proceedings, publications series.
6100 - 6110 Specific mineralogy, systematics
6100 Specific mineralogy, general systematics
6101 Elements, alloys (incl. carbon group, graphite, diamond).
6102 Sulphides, sulpho salts
6103 Halides
6104 Oxides
6105 Carbonates, nitrates
6106 Borates
6107 Sulphates, selenates, tellurates, chromates, molybdates, tungstates
6108 Phosphates, arsenates, vanadates.
6109 Silicates, germanates (including quartz).
6110 Organic minerals
6120 Illustrated books on minerals
6140 - 6190 Gemology
6150 Identification of gems
6160 Properties of gems
6170 Applied gemology
6180 Collections of gems
6190 Systematics of gems
6200 - 6240 Investigation, identification and measurement of minerals.
6210 Field guides, illustrations, tables
6220 Mineral optics
6230 X-ray radiography
6240 Electron microscopy
6400 Geochemistry
6800 Technical mineralogy

UQ METALLURGY, METALS AND ALLOYS UQ (page heading)

UQ

7000 - 7740 Metallurgy, metals and alloys.
(UQ 7000 - UQ 8800 are reserved for use by the university libraries in Bayreuth and Regensburg).

7000 **General overview**
7020 **Theoretical metallurgy**
7040 **Metallurgy –practical laboratories, teaching laboratories.**
7050 **Atlas of interference-layer metallography**
7100 **Metallurgy, general textbooks**
7200 **Tables of crystal structures, lattice constants, phase diagrams of metals.**
7250 **Intermetallic compounds (excluding alloys)**
7300 **Physical investigations of metals**
7320 **Chemical analysis of metals**
7340 **Textures of metals**
7360 **Lattice defects in metals**
7380 **Radiation damage in metals**
7400 **Mechanical properties of metals; metal fatigue, breakage**
7500 **Corrosion**
7520 **Powder metallurgy**
7600 **Particular metals and alloys; superplastic alloys (Gmelin reference numbers).**
7720 **Liquid metals**
7740 **Metals in the gas phase, metal vapours.**

UQ MATERIALS SCIENCE UQ (page heading)

UQ

8000 - 8800 Materials science
(UQ 7000 - UQ 8800 are reserved for use by the university libraries in Bayreuth and Regensburg).

8000 **General textbooks**
8010 **Materials testing**
(see also ZM 3500)
8025 **Mechanical properties of condensed matter.**
8050 **Individual reports on materials science.**
8100 **Series**
8200 **Particular inorganic materials.**
8220 **Diamond**
8225 **Graphite**
8230 **Fullerites and condensed fullerenes in general.**
8240 **Water and ice**
Semiconductor materials: see also UP 3100.
8300 **Particular organic materials**
8320 **Fibres**
(see also UV 9050).
8400 **High-temperature materials**
(see also UV 9400).
8420 **Composites**
(see also UV 9250).
8440 **Hard materials and high-strength materials in general.**
8500 **Ceramic materials (oxides, carbides).**
8520 **Phase diagrams of ceramics**
8600 **Glasses and metallic glasses, rapidly quenched materials.**
8700 **Liquid crystals**
8750 **Quasicrystals**
8800 **Amorphous materials, non-crystalline solids.**

UR Structure of liquids, physics of gases, plasma physics

1000 Classical liquids
1020 Compendia, lectures, reviews
1030 Specialised dictionaries and encyclopaedias
1050 Collections of exercises for the entire field
1070 Tables, tabulations
1090 Complete publications series
1100ff Conventions, symposia, summer schools on the entire field.
1500 Statistical theory of liquids
1600 Transport processes in liquids
1800 Light scattering in liquids
1800a Relaxation phenomena in liquids: cf. UH 5600.
2000 Quantum fluids
2900 Liquid and solid hydrogen
3000 Helium, superfluids, fermi liquids
4400 Interface phenomena in fluids
4500 Liquid-gas interface phenomena
4600 Electrically-conducting liquids
4700 Dielectric liquids
4800 Magnetic liquids (ferrofluids)
5000 - 7000 Physics of gases, plasma physics.
5000 Physics of gases in general
5020 Compendia, lectures, reviews
5030 Specialised dictionaries and encyclopaedias
5090 Complete publications series
5100 Conferences, symposia, summer schools on the entire field.
5100a Tabulations on the physics of gases: cf. UG 1070.
5100b Thermodynamic functions for various gases cf. UG 1070.
5100c Kinetic theory of gases, statistical mechanics of gases, gas dynamics: cf. UG 1300.
5550 Impulse waves in gases, shock waves.
5600 Dynamics of dilute gases
5700 Transport processes in gases, viscosity and diffusion.
5800 Combustion processes
6000 Electrical and ionisation phenomena in gases.
7000 Magnetohydrodynamics, MHD generators.
8000 - 9000 Plasma physics
8000 General overview
8200 Plasma diagnostics
8300 Plasma waves and propagation of plasma waves.
8500 Nonlinear plasma physics
9000 Controlled nuclear fusion

US Astronomy, Astrophysics

For works on the history of astronomy cf. UB 2475 - UB 2484 (history of individual sub-fields and problems in physics). Popular presentations can be found under UB 5260. For works on the philosophy of science and astronomy cf. CC 3500 and UB 6000ff.

1000 **General overview**
1020 **Compendia, lectures, reviews**
1030 **specialised dictionaries and encyclopaedias**
1040 **Astronomical data and constants**
1050 **Collections of exercises for astronomy and astrophysics.**
1090 **Complete publications series.**
1092 ***Indiv. signum*: International Astronomical Union: Transactions**
1094 ***Indiv. signum*: Reviews in Modern Astronomy**
1096 ***Indiv. signum*: Vistas in astronomy**
1100 **Conferences, symposia, summer schools on astronomy, astrophysics.**
- 1199.99 (*Ordered by the last two numbers of the year of the conference*).
1100 - 1199 **for 1900 - 1999**
(*Ordered by the last two numbers of the year of the conference*).
1199.00 **for 2000 - 2099**
- 1199.99 (*Ordered by the last two numbers of the year of the conference*).
1200 **Celestial mechanics in general.**
1250 **Orbit determination of natural and artificial celestial bodies.**
1400 - 1900 **Practical astronomy, observational astronomy.**
1400 **General overview**
1420 **Illustrated books**
1450 **Observatories, construction and operation**
1480 **Astronomical instruments**
1500 **Optical astronomy**
1550 **Other optical methods (e.g. celestial photography), image processing, data analysis.**
1640 **Radio astronomy**
1650 **UV and X-ray astronomy**
1660 **Infrared astronomy**
1670 **Gamma-ray astronomy, very-high-energy astronomy.**
1700 **Observational guides for astronomical observers.**
1770 - 1860 **Spherical astronomy**
1770 **General overview**
1800 **Astronomical time scales and time measurements.**
1810 **Astronomical position determinations, astrometry.**
1850 **Star maps, celestial atlases and catalogues; apparent positions.**
1860 **Astronomical yearbooks (ephemerides), calendars, almanacs.**
1900 **Astronomy as an ancillary science for geodetics, nautical astronomy etc.**
2000 - 8950 **Astrophysics, cosmology**
2000 **General astrophysics and cosmology**
2200 **Specific hypotheses and models, e.g. the theory of black holes.**
2300 **Gravitation and relativistic cosmology.**
See also UH 8000 - UH 8700.
2400 **Quantum gravitation (quantum cosmology), newer theories of gravitation.**
See also UO 4000 - UO 4100.
2500 **The early universe**
3100 - 3480 **Galaxies; structure of the universe.**
3100 **General: dynamics, structure and evolution of star systems.**
3200 **The Milky Way ("the galaxy").**
3300 **Interstellar space, interstellar matter.**
3350 **The galactic centre**
3400 **Other galactic systems, external galaxies;**
includes among others M31 (Andromeda galaxy), M33 (Triangulum nebula), LMC/SMC (large/small Magellanic clouds).
3420 **Active galaxies**
3440 **Clusters of galaxies**
3460 **The large-scale structure and the expansion of the universe.**
3480 **Cosmic microwave background radiation.**

3500 **Magnetohydrodynamics in the field of astrophysics, plasma astrophysics.**
3600 **Thermonuclear reactions in astrophysics, particle astrophysics.**
4000 - 5600 **Star formation and stellar evolution.**
- **4000** **General overview**
- **4040** **Stellar spectroscopy**
- **4100** **Stellar interiors**
- **4200** **Stellar atmospheres**
- **4300** **Rotation of stars**
- **4500 - 5600** **Star types, classification.**
  - **4500** **Novae**
  - **4600** **Supernovae**
  - **4700** **Red giants**
  - **4750** **AGB stars, planetary nebulae**
  - **4800** **Red dwarves**
  - **4900** **White dwarves**
  - **4950** **Neutron stars**
  - **5000** **Binary star systems**
  - **5200** **Variable stars;**
    Pulsars: see also US 4950.
  - **5600** **Other topics**

6000 – 6700 **The solar system, the Sun.**
See also US 8000 - US 8910, the planetary system of the Sun.
- **6000** **General overview**
- **6100** **The Sun as a star; orbit, rotation**
- **6200** **Solar radiation, nuclear reactions in the Sun, the solar spectrum.**
- **6300** **Solar plasma, solar corona**
- **6400** **The solar chromosphere**
- **6500** **The magnetic field of the Sun**
- **6530** **Sunspots, activity cycles of the Sun**
- **6600** **Protuberances**
- **6700** **The solar wind**

7400 - 7700 **Planetary systems in general, exoplanets.**
- **7400** **General overview**
- **7500** **Dynamic processes in planetary systems.**
- **7600** **The search for exoplanets**
- **7650** **Individual exoplanets**

8000 - 8910 **The planetary system of the Sun (the Solar System);**
Planetary systems in general, cf. US 7400 - US 7700.
- **8000** **General overview**
- **8030** **Atmospheres of the planets in the Solar System.**
- **8040** **Magnetospheres of the planets in the Solar System.**
- **8100** **Mercury**
- **8150** **Venus**
- **8200** **The Earth as a planet**
- **8300 - 8340** **The Moon**
  - **8300** **General overview**
  - **8320** **Shape, surface**
  - **8325** **Lunar atlases**
  - **8340** **Lunar geology (selenology)**
- **8400** **Mars**
- **8420** **Planetoids; asteroids**
- **8500** **Jupiter**
- **8550** **Saturn**
- **8600** **Uranus**
- **8650** **Neptune**
- **8700** **Pluto (formerly classed as a planet).**
- **8750** **The outer regions of the solar system: Possible outer planets and dwarf planets, planetoids; Kuiper belt, Oort cloud.**
  Exoplanets: cf. US 7400 - US 7700, planetary systems in general, exoplanets.
- **8800** **Comets**
- **8900** **Meteors and meteorites**
- **8910** **Other phenomena within the solar system, e.g. zodiacal light.**

9000 - 9600 **Space research.**
See also ZO 8000 - ZO 8900: Space travel and rocket technology.

9000 **General overview.**
Includes also the space programmes of individual countries, space research using ground stations, satellites etc.

9400 **Manned space flight**

9500 **Space technology**

9600 **Interplanetary and interstellar communication**

9800 **Astrobiology**
See also WH 2800, Astrobiology ...

UT

1000 – 2970 Physics of the solid Earth – geophysics.

- **1000 – 1300 Geophysics in general**
  - **1000 General overviews and fundamentals.**
  - **1050 Conferences and proceedings**
  - **1100 History of geophysics**
  - **1150 Methods, technical equipment, mathematical techniques.**
  - **1200 Interdisciplinary areas, relation to other fields.**
  - **1300 International geophysical projects.**
- **1400 – 2250 General geophysics**
  - **1400 General overview**
  - **1500 Formation and evolution of the Earth.**
  - **1550 Structure of the Earth (constitution of the Earth, Earth's crust, mantle, interior, core).**
  - **1600 Periodic motions of the Earth.**
  - **1650 Earth's gravitational field, gravitational force.**
  - **1700 Isostasy.**
  - **1800 Seismology, earthquakes.**
  - **1900 Radiation physics and the radioactivity of the Earth.**
  - **1950 Geothermics.**
  - **2000 Earth's electricity.**
  - **2100 Earth's magnetism (Earth's magnetic field, magnetism of rocks, paleomagnetism).**
  - **2150 Paleo-geophysics**
  - **2200 Fluid dynamics**
  - **2250 Geodynamics, tektonophysics.**
- **2300 - 2850 Applied geophysics, geophysical methods.**
  - **2300 General overview**
  - **2350 Gravimetry**
  - **2400 Geomagnetics, electromagnetics**
  - **2450 Geoelectricity**
  - **2500 Seismics**
  - **2550 Radiometry, radioisotope geophysics.**
  - **2600 Geothermal methods**
  - **2650 Geophysical borehole measurements, petrophysics.**
  - **2700 Aero-geophysical methods, remote reconnaissance.**
  - **2750 Engineering geophysics, composite surveys.**
  - **2800 Other methods**
  - **2850 Application of geophysical methods to other fields.**
- **2900 - 2970 Regional geophysics**
  - **2900 Comprehensive continental descriptions.**
  - **2910 Europe**
  - **2920 Asia**
  - **2930 Africa**
  - **2940 Americas**
  - **2950 Australia**
  - **2960 Polar regions**
  - **2970 Oceans**

UT PHYSICS OF THE HYDROSPHERE – HYDROLOGY UT (page heading)

UT

3000 – 4800 Physics of the hydrosphere – hydrology.
- **3000 General overview**
- **3100 Mechanics and dynamics of the hydrosphere.**
- **3500 Thermodynamics of the hydrosphere.**
- **3900 Acoustics of the hydrosphere.**
- **4300 Optics of the hydrosphere.**
- **4700 Other phenomena in the hydrosphere.**
- **4800 Ocean-atmosphere interactions.**

UT PHYSICS AND CHEMISTRY OF THE ATMOSPHERE – METEOROLOGY UT (page heading)

UT

5000 – 9800 Physics and chemistry of the atmosphere – Meteorology.
- **5000 – 5090 Meteorology and climatology in general.**
  - **5000 General overviews and fundamentals.**
  - **5010 Tables and tabulations**
  - **5020 Maps and atlases**
  - **5030 Conferences and proceedings**
  - **5050 Progress reports**
  - **5080 History of meteorology and climatology.**
  - **5090 Interdisciplinary areas, relations to other fields.**
- **5100 – 6600 General meteorology**
  - **5100 General overview**
  - **5150 Near-surface layers**
  - **5200 Troposphere**
  - **5250 Middle and upper atmosphere (stratosphere, mesosphere, ionosphere, exosphere).**
  - **5600 Oceanography**
  - **6000 Dynamics and thermodynamics of the atmosphere;** *(air circulation, airflow, wind).*
  - **6050 Dynamics on the mesoscale.**
  - **6100 Hydrology of the atmosphere;** *(clouds and precipitation).*
  - **6150 Groundwater**
  - **6180 Glaciology**
  - **6200 - 6240 Modelling**
    - **6200 General modelling**
    - **6210 Numerical weather prediction**
    - **6220 Climate modelling**
    - **6230 Data assimilation**
    - **6240 Predictability**
  - **6400 Acoustics of the atmosphere.**
  - **6500 Optics of the atmosphere, radiation.**
  - **6600 Electricity and radioactivity of the atmosphere.**
- **8000 – 8600 Applied meteorology**
  - **8000 General overview**
  - **8100 - 8130 Measurements and observational methods.**
    - **8100 Measurements and observational methods in general.**
    - **8110 *in-situ* methods**
    - **8120 Remote measurements, passive**
    - **8130 Remote measurements, active**
  - **8200 Synoptic meteorology**
  - **8300 Bio-meteorology**
  - **8400 Energy meteorology**

8600 Specific meteorology of particular zones and regions

8700 - 8950 Climatology

8700 General overview, observations

8800 Meso- and microclimatology

8850 Regional climatology

8900 Climate change, climatic variations.

8970 Effects of climate change.

9000 – 9800 Chemistry of the atmosphere; aerosols.

9000 General overview

9070 *Indiv. signum*: Particle Atlas

9071 *Indiv. signum*: Advances in Aerosol Physics

9100 - 9250 Aerosol particles

9100 Aerosols in general

9150 Microphysical aerosol properties.

9250 Optical aerosol properties.

9600 Trace gases

9800 Environmental physics; physics of the biosphere in general.

UV Polymer physics

1000 Polymer physics in general, comprehensive presentations of the field of polymer physics.

1020 Compendia, lectures, reviews

1030 Specialised dictionaries and encyclopaedias.

1050 Collections of exercises for polymer physics.

1070 Tables, tabulations

1090 Complete publications series

1100 Conferences, symposia, summer schools on polymer physics.

- 1199.99 (*Ordered by the last two numbers of the year of the conference*).

1100 – 1199 for 1900 - 1999
(*Ordered by the last two numbers of the year of the conference*).

1999.00 for 2000 - 2099

- 1999.99 (*Ordered by the last two numbers of the year of the conference*).

2000 Free polymer molecules and polymer molecules in solution, general.
As polymers, we denote here a particular type of macromolecules which are formed by building up chains of identical molecular components (monomers). The field of macromolecules in general is much broader and is not covered here.
(cf. chemistry: sections VE , VH , VK , VN).

2100 Synthesis and reactions.

2200 Constitution and chemical configuration, conformations (statistics).

2300 Spectroscopic methods for characterisation of the configuration.

2400 Characterisation of plastics in general and identification and testing methods.

2500 Determination and distribution of molecular weights.

2600 Transport phenomena in polymers; diffusion, permeation, viscosity.

2700 Intermolecular forces, intramolecular potentials, rotation potentials.

2800 Thermodynamics of polymer solutions and swelling.

2890 Corrosion of plastics.

2900 Ageing and stability of plastics, durability.

3000 – 3600 Structure of condensed polymers.

3000 General overview

3100 Structure and physical properties of polymer crystals.

3200 Thermodynamics of the melting and crystallisation of polymers, measurement methods etc.

3300 Morphological structures of polymers, electron microscopy etc.

3400 Colloid structures;
(small-angle X-ray scattering (SAXS) etc. ...).

3500 Structure of amorphous materials and amorphous components (glass temperature).

3600 Preparation and crystal growth.

4000 – 4600 Continuum mechanics of polymers.

4000 General overview

4100 Mechanical properties; elasticity, plasticity, relaxation, retardation, shrinking.
(See also UF 3000, 3100, 3200).

4200 Rubber elasticity (Neo-Hook, Rivlin-Mooney etc.)

4300 Breaking processes in polymers, mechanics of breakage in general.
(See also UQ 7400).

4400 Micromechanics in composite systems.

4500 Low-temperature behaviour of polymers (plastics in space applications at 100 - 200 K).

4600 Acoustic behaviour, sound damping.

5000 – 5500 Electrical and optical properties of polymers.

5000 General overview

5100 Dielectric properties, polarisability, dielectric breakdown, electrostatic charging, dielectric relaxation and absorption, piezoelectricity and ferroelectricity of polymers.

5200 Conductivity.

5300 MO theory, phonons, vibrons.

5400 General optical properties of polymers; double refraction, polarisation and interference microscopy, photoelasticity

5500 Fluorescence, phosphorescence and luminescence in polymers.

6000 Thermal and caloric behaviour of polymers.
Heat conductivity of polymers, thermal expansion of polymers, thermomechanics of polymers, general caloric effects.

7000 – 7200 Interface phenomena in polymers.

7000 General overview
7100 Surface wetting, adhesion, cohesion.
7200 Bonding and coating of polymers, electroplating of plastics.

8000 Colourimetry and discolouration in polymers.

9000 - 9900 Particular polymeric substance groups and their technologies.

9000 General overview
9050 Fibres, foils
9100 Casting resins, artificial resins.
9150 Elastomers, thermoplastic materials, rubbers.
9200 Polymeric foams.
9240 Polymer blends and mixtures.
9250 Composite materials, fibreglass reinforced polyester, carbon-fibre reinforced polyester.
9270 Solvents and plasticisers for polymers.
9300 Dispersions
9350 Water-soluble polymers.
9400 High-temperature resistant and fire-resistant polymers.
9450 Degradable polymers
9500 Biomedical polymers
9550 Semiconducting polymers
(see also UP 3100).
9555 Light-sensitive polymers, polymeric photoreceptors.
9560 Polymers with metallic properties (e.g. high electrical conductivity).
9570 Inorganic polymers.
9900 Other topics (plastics in the building industry etc.)

UX Experimental methods of fundamental and applied physics;
(cf. in general the systematic classification <Technnology>).

1100 Theory and evaluation of measurements in general; measurement methods and metrology in general.
1200 Unit systems, norms, units.
1300 General methods of experimental physics.
1320 Spectroscopic methods.
1380 Other methods (e.g. physical age determinations).
1400 Machine-shop techniques.
1450 Mechanical engineering technology, precision machining.
1500 Vacuum techniques.
2000 Primary energy; solar energy, wind energy, heat-pump technology, biogas.
2100 Fundamentals of electronics;
for University Library Regensburg: cf. ZN 1000 ff.
2150 Electronic devices;
for University Library Regensburg: cf. ZN 1000 ff.
2200 Electronic circuits, amplifier technology;
for University Library Regensburg: cf. ZN 1000 ff.
(See also UH 4000).
2250 Pulsed and digital systems (signals and interference);
for University Library Regensburg: cf. ZN 1000 ff.
2300 Digital electronics;
for University Library Regensburg: cf. ZN 1000 ff.
2350 Microelectronics;
for University Library Regensburg: cf. ZN 1000 ff.
(Electronics see also UH 4000).
2500 Microwave physics, communications and radio technology;
for University Library Regensburg: cf. ZN 1000 ff.
3000 Temperature technology in general
3300 Low-temperature techniques
3600 High-temperature techniques
6000 High-pressure techniques
9000 Control engineering.
(See also ZQ 1000 ff).

A

Astronomy / history <0500-1500> UB 2478
Astronomy / history <1500-1600> UB 2479
Astronomy / history <1600-1700> UB 2481
Astronomy / history <1700-1800> UB 2482
Astronomy / history <1800-1900> UB 2483
Astronomy / history <1900- > UB 2484
Astronomy / illustrated books US 1420
Astronomy / image processing US 1550
Astronomy / numerical methods US 1550
Astronomy / personal bibliographies UB 2075
Astronomy / popularisations UB 5260
Astronomy / textbooks US 1000
Astronomy / textbooks US 1400
Astrophotography US 1550
Astrophysics US 1000
Astrophysics US 2000
Astrophysics / bibliographies UB 1062
Astrophysics / conferences US 1100 - US 1199.99
Astrophysics / dictionaries UB 1475
Astrophysics / Greece <Antiquity> / history UB 2477
Astrophysics / history UB 2475
Astrophysics / history / Babylonians UB 2476
Astrophysics / history / Greece UB 2477
Astrophysics / history <0500-1500> UB 2478
Astrophysics / history <1500 - 1600> UB 2479
Astrophysics / personal bibliographies UB 2075
Astrophysics / popularisations UB 5260
Astrophysics / textbooks US 1000
Astrophysics / textbooks US 2000
Astrospectroscopy US 1550
Asymptotic red giant US 4750
Atmosphere / aero-electricity UT 6600
Atmosphere / acoustics UT 6400
Atmosphere / dynamics UT 6000
Atmosphere / hydrology UT 6100
Atmosphere / meteorological optics UT 6500
Atmosphere / ocean interactions UT 4800
Atmosphere / radioactivity UT 6600
Atomic beams / experiments UM 5000
Atomic beams / optics UM 2100
Atomic mass UM 2110
Atomic (nuclear) weapons UN 5600
Atomic physics UM 2000
Atomic physics / bibliographies UB 1048
Atomic physics / dictionaries UB 1440
Atomic physics / history UB 2440
Atomic physics / instruments / methods UM 2100
Atomic physics / molecular physics UM 1000
Atomic physics / molecular physics / conferences UM 1100 - UM 1199.99
Atomic physics / molecular physics / exercises UM 1050
Atomic physics / molecular physics / tables UM 1070
Atomic physics / molecular physics / textbooks UM 1000
Atomic physics / personal bibliographies UB 2040
Atomic physics / popularisations UB 5140
Atomic spectrum UM 2200
Atomic structure / spectroscopy UM 2200
Atoms / electric moments UM 2130
Atoms / magnetic moments UM 2130
Atoms / molecules / electronic structure UM 1200
Atoms / photoionisation UM 2520
Atoms / polarisability UM 2140
Atoms / spectral lines UM 2350
Auger effect UM 2530

B

C

Crystal growth UQ 2000
Crystal growth / evaporation UQ 2160
Crystal growth / flux UQ 2120
Crystal growth / gas phase UQ 2160
Crystal growth / imperfections UQ 2400
Crystal growth / melt UQ 2100
Crystal growth / physical-chemical measurement UQ 2300
Crystal growth / polymers UV 3600
Crystal growth / solution UQ 2140
Crystal growth / vapour phase UQ 2160
Crystal mathematics UQ 1200
Crystal optics UQ 4500
Crystal optics / optical phenomena / atlases UQ 4640
Crystal optics / tables UQ 4600
Crystal physics UQ 4000
Crystal shapes / atlases UQ 1225
Crystal structure analysis UQ 5000
Crystal structure analysis / electron diffraction UQ 5500
Crystal structure analysis / mathematical methods UQ 5300
Crystal structure analysis / neutron diffraction method UQ 5550
Crystal structure analysis / powder method UQ 5400
Crystal structure analysis / specific materials groups UQ 5200
Crystal structure analysis / tables UQ 5050
Crystal structure analysis / textbooks UQ 5100
Crystal structure / phase transformation UQ 3400
Crystal surface treatment UQ 2800
Crystallisation UQ 2000
Crystallisation / of polymers UV 3200
Crystallography UQ 1000
Crystallography / bibliographies UB 1056
Crystallography / conferences UQ 1100 - UQ 1199.99
Crystallography / dictionaries UB 1460
Crystallography / exercises UQ 1050
Crystallography / geometry UQ 1200
Crystallography / group theory UQ 1350
Crystallography / history UB 2460
Crystallography / personal bibliographies UB 2060
Crystallography / physical-chemical measurements UQ 2300
Crystallography / popularisations UB 5220
Crystallography / textbooks UQ 1000
Crystals / band conductivity UP 5010
Crystals / colour centres UP 8300
Crystals / elasticity UQ 4100
Crystals / microscopy UQ 4500
Crystals / plasticity UQ 4100
Crystals / polarisation microscopy UQ 4500
Crystals / thermal expansion UQ 4300
Crystals / thermal properties UQ 4300
Curie, Marie UB 2554
Current algebra / elementary particles UO 3000
Current algebra / Lagrange representation / elementary particles UO 3010
Curricula / physics / elementary schools UB 4096
Curricula / physics / high schools, upper forms UB 4092
Curricula / physics / middle schools / middle forms UB 4093
Curricula / physics / middle schools UB 4093
Curricula / physics / secondary schools UB 4095
Curricula / physics / special education UB 4097
Curricula / physics / technical colleges / adult education UB 4091
Curricula / physics / technical schools UB 4094
Curricula / physics / university level UB 4090
Cyclic accelerators *cf.* oscillating-field accelerators
Cyclotron UN 6170
Cyclotron resonance UP 4100

D

Dark energy US 3460
Dark matter US 3100
Dark matter US 3440
Dark matter US 3460
Data analysis / astronomy US 1550
Debye-Sears effect UH 5715
Decay <Physics> / lasers UH 5680
Deep-inelastic heavy-ion reactions UN 3360
De Haas-van Alphen effect UP 4100
Delta-Cephei stars US 5200
Desalination / nuclear reactor technology UN 5370
Detector circuit UN 7300
Determinism / physics UB 8000
Diamagnetism UP 6100
Diamond UQ 8220
Didactics / physics UB 4049
Didactics / physics / teaching materials UB 4060
Dielectric / absorption / polymers UV 5100
Dielectric liquids UR 4700
Dielectric / polymers UV 5100
Dielectric relaxation / polymers UV 5100
Dielectrics UP 4600
Differential thermal analysis UQ 3500
Diffraction / electromagnetic waves UH 5200
Diffusion / crystals UQ 2600
Diffusion / gas UR 5700
Diffusion / metals UQ 2600
Diffusion / polymers UV 2600
Diffusion / solids UP 5070
Diffusion / thin films UP 7990
Dilute gas / dynamics UR 5600
Dimensional equation UB 9000
Discharge lamp *cf.* gas-discharge lamp
Discolouration / polymers UV 8000
Dislocation <Crystallography> / crystal growth UQ 2440
Dislocation <Crystallography> / lattice defects UP 2100
Dispersion / polymers UV 9300
Dispersion relation / bootstrap hypothesis UO 2620
Dispersion relation / crossing symmetry UO 2630
Dispersion relation / Mandelstam representation UO 2650
Dispersion relation / sum rule UO 2600
Dissertations / bibliographies / physics UB 1028
Dissociation energy / molecules UM 3110
Distance measurements / lasers UH 5730
Distance measurements / universe US 3460
Dosimetry UN 7100
Double refraction / polymers UV 5400
Droplet model (nuclei – liquid drop model) UN 1520
Duality / hadrons UO 5360
Dual model / hadrons UO 5360
Dual model / strong interaction UO 5360
Durability / polymers UV 2900
Dwarf galaxy US 3100
Dwarf nova US 5000
Dwarf planet US 8750
DWBA method / Born approximation UN 2530
Dye lasers UH 5620
Dynamic lattice *cf.* transient lattice

E

Electrostatic charging / polymers UV 5100
Electrostatic / particle accelerators UN 6120
Electrostatics UH 2000
Electroweak interaction / gauge theory UO 5510
Elementary-particle interactions / phenomenology UO 5000
Elementary-particle physics / astrophysics US 3600
Elementary-particle physics / bibliographies UB 1052
Elementary-particle physics / conferences UO 1100 - UO 1199.99
Elementary-particle physics / exercises UO 1050
Elementary-particle physics / history UB 2450
Elementary-particle physics / particle accelerators UN 6100
Elementary-particle physics / personal bibliographies UB 2050
Elementary-particle physics / popularisations UB 5180
Elementary-particle physics / symmetry properties / conservation laws UO 1500
Elementary-particle physics / tables UO 1070
Elementary-particle physics / textbooks UO 1000
Elementary particles UO 6000
Elementary particles / weak interaction / phenomenology UO 5100
Ellipsometry UP 8300
Elliptical nebula US 3100
Emission nebula US 3300
Energy-level transitions / atomic nucleus / angular distribution UN 2030
Energy-level transitions / atomic nucleus / correlation measurement UN 2030
Energy-level transitions / atomic nucleus / internal conversion UN 2070
Energy-level transitions / atomic nucleus / lifetime UN 2020
Energy-level transitions / atomic nucleus / multipole matrix elements UN 2050
Energy-level transitions / atomic nucleus / multipole transitions UN 2060
Energy-level transitions / atomic nucleus / transition probability UN 2020
Energy-range relation UN 7100
Entropy / information theory UG 3000
Environmental physics UT 9800
Ephemerides US 1860
Epitaxy UQ 2200
Eruptive variable stars US 5200
ESEEM UP 9340
ESR *cf.* electron spin resonance
Etching / crystal surface treatment UQ 2800
Evaporation / crystal growth UQ 2160
Examinations preparation / physics UB 4085
Excimer lasers UH 5628
Exciplex / lasers UH 5628
Excited state / lifetime / atomic spectrum UM 2350
Excited state / lifetime / molecular spectrum UM 4300
Excitons UP 3710
Exoplanets *cf.* extrasolar planets
Exosphere UT 5250
Exotic atoms UM 2160
Expansion / universe US 3460
Experimental physics / methods UX 1300
Experiments / history UB 2490
Experiments / methods UX 1300
Experiments / nuclear physics UN 6000
Experiments / physics / bibliographies UB 1067
Experiments / physics / dictionaries UB 1490
Experiments / physics / personal bibliographies UB 2090
Experiments / physics / popularisations UB 5300
Extrasolar planets (exoplanets) US 7400
Extrasolar planets (exoplanets) US 7650
Extrasolar planets / discovery US 7600
Extrasolar planets / research methods US 7600
Extraterrestrial life US 9800
Eye / optics / information processing UH 7200

F

Faddeev equation
Far infrared *cf.* FIR
Fast brooder reactor UN 5320
Fatigue <Materials> *cf.* metals fatigue
Fatigue / metals UQ 7400
Femtosecond lasers UH 5618
Femtosecond spectroscopy UH 5710
Fermi liquid UR 3000
Fermi surface / solid-state physics UP 4100
Fermion system UP 3600
Fermion system / interactions UL 4000
Ferrimagnetism UP 6300
Ferroelectricity UP 4700
Ferroelectricity / polymers UV 5100
Ferroelectrics UP 4700
Ferrofluids *cf.* magnetic liquids
Ferromagnetism UP 6300
***Festschrift* / groups UB 3710**
***Festschrift* / individual physicists UB 3410**
Fibre optics UH 5760
Fibre structure UP 5050
Fibres / polymer UV 9050
Field emission UP 5500
Field-emission microscopy UH 6330
Field-ion microscopy UH 6330
Field theory / elementary particles UO 4000
Field theory / elementary particles / asymptotic UO 4030
Field theory / elementary particles / axiomatic UO 4010
Field theory / elementary particles / bound state UO 4080
Field theory / elementary particles / nonlinear theory UO 4040
Field theory / elementary particles / renormalisation UO 4020
Field theory / quantum chromodynamics UO 5730
Film dosimetry UN 7100
Filter / optics UH 5400
FIR laser UH 5632
FIR spectroscopy UH 6000
Flash lamp UH 6700
Fluctuations <Physics> / noise UG 3700
Fluctuations <Physics> / spin UP 6700
Fluorescence UH 5870
Fluorescence lines UH 5710
Fluorescence / polymers UV 5500
Flux / crystallisation from UQ 2120
Foam (plastic) UV 9200
Foil / polymers UV 9050
Formula tabulations / physics UC 300
Fourier optics UH 5400
Fourier spectroscopy UH 5400
Fourier-transform spectroscopy UH 6000
Fractals UG 3900
Franck-Condon principle / molecular spectra UM 4250
Free-electron laser UH 5635
Frequency multiplication UH 5690
Fuel elements / production UN 5230
Fuel elements / reprocessing UN 5230
Fullerenes UQ 8230

G

H

I

J

K

L

M

Microwave / physics UX 2500
Microwave spectrum / atomic physics UM 2240
Microwave spectrum / communications technology UX 2500
Microwave spectrum / molecular physics UM 3240
Milky Way system US 3200
Milky Way system US 3400
Millimetre-wave technology UH 5950
Mineral identification / external characteristics UQ 6200 - UQ 6240
Mineral identification / field guides UQ 6200 - UQ 6240
Mineral identification / physical-chemical measurements UQ 6200 - UQ 6240
Mineralogy UQ 6000 - UQ 6040
Mineralogy / bibliographies UB 1056
Mineralogy / conferences UQ 1100 - UQ 1199.99
Mineralogy / dictionaries UB 1460
Mineralogy / history UB 2460
Mineralogy / personal bibliographies UB 2060
Mira (star) US 5200
Mirror (reflecting) telescopes US 1480
Mode coupling / lasers UH 5680
Molecular beams UM 5000
Molecular clouds US 3300
Molecular dynamics / correlation times UM 3150
Molecular masses UM 3120
Molecular models UM 1000
Molecular physics UM 3000
Molecular physics / bibliographies UB 1088
Molecular physics / dictionaries UB 1440
Molecular physics / history UB 2440
Molecular physics / instruments / methods UM 3100
Molecular physics / personal bibliographies UB 2040
Molecular physics / popularisations UB 5140
Molecular spectra UM 3200
Molecular spectra / band strength UM 4250
Molecular spectra / Franck-Condon principle UM 4250
Molecular spectra / lifetime / measurements / excited states UM 4300
Molecular spectra / oscillator strength UM 4250
Molecular spectra / spectral bands UM 4200
Molecular spectra / spectral lines UM 4200
Molecular spectra / transition moments UM 4250
Molecular structure / spectroscopy UM 3200
Molecular symmetry UM 3110
Molecular-weight determination / polymers UV 2500
Molecules / core binding energy UM 4500
Molecules / electric moments UM 3130
Molecules / magnetic moments UM 3130
Molecules / magnetic susceptibility UM 3140
Molecules / photoionisation UM 4500
Molecules / polarisability UM 3140
Molten salts UQ 2120
Moon US 8300
Moon / atlases US 8325
Moon / geology (selenology) US 8340
Moon's surface US 8320
Morphology / galaxies US 3100
Morphology / polymers UV 3200
Mossbauer effect / solids UP 9500
Mossbauer spectroscopy UP 9500
Mossbauer spectrum UP 9500
MO theory / polymers UV 5300
Multiphoton processes UH 5690
Multiphoton processes / absorption UH 5690
Multiphoton processes / atomic physics UM 2550
Multiple resonance UM 3800

N

O

P

Photoelasticity / polymers UV 5400
Photoelectron spectra UM 4000
Photoemission UP 5450
Photographic apparatus *cf.* cameras
Photography UH 7000
Photo-Hall effect UP 5110
Photoionisation / atoms UM 2520
Photoionisation / molecules UM 4500
Photoluminescence UH 5810
Photon-photon interaction UP 3720
Photons UO 6440
Photons / atoms UM 2400
Photons / spin waves UP 3720
Photonuclear reaction *cf.* nuclear photoeffect
Photoresistance UP 5300
Physics / education UB 4050
Physics education / curricula UB 4050
Physics / evaluation of experiments / schools UB 4053
Physics / history / bibliographies UB 1031
Physics instruction / didactics UB 4056
Physics / nomenclature UB 1015
Physics / philosophy UB 6000
Physiological acoustics UF 6800
Physiological optics UH 7200
Picosecond range / lasers UH 5618
Picosecond spectroscopy UH 5710
Piezoelectric effect UP 4900
Piezoelectricity / polymers UV 5100
Pion-nucleon interactions UO 5315
Pion-nucleon scattering UN 3410
Planetary atmosphere US 8030
Planetary nebula US 4750
Planetary system US 7400
Planetary system / dynamics US 7500
Planetary system / dynamics US 8000
Planetary system / evolution US 7400
Planetary system / formation US 7400
Planetary system / formation US 8000
Planetoids US 8420
Planetoids US 8750
Planets US 8000
Planets / magnetosphere US 8040
Plasma diagnostics UR 8200
Plasma physics UR 8000
Plasma physics / astrophysics US 3500
Plasma physics / bibliographies UB 1058
Plasma physics / dictionaries UB 1470
Plasma physics / history UB 2470
Plasma physics / lasers UH 5770
Plasma physics / personal bibliographies UB 2070
Plasma physics / popularisations UB 5240
Plasma waves UR 8300
Plasmons UP 3740
Plasticisers / polymers UV 9270
Plasticity UF 3100
Plasticity / crystals UQ 4100
Plasticity / polymers UV 4000
Plastics / corrosion UV 2890
Plastics, electroplating UV 7200
Pluto / dwarf planet US 8700
Poincaré invariant / elementary-particle physics UO 1510
Point defects / crystal growth UQ 2400
Point defects / lattice defects / theory UP 2100

Polymers / mechanics / properties UV 4100
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