## PACS 2010 ALPHABETICAL INDEX

*PACS* codes from the Acoustics Appendix or the Geophysics Appendix are indicated by an asterisk (\*).

## ABCDEFGHIJKLMNOPQRSTUVWXYZ

```
Aberrations, 42.15.Fr
Ab initio calculations (electronic structure of atoms and molecules), 31.15.A-
Ablation
   film deposition, 81.15.Fg
   laser impact on surfaces, 79.20.Eb
   in plasmas, 52.38.Ph
Abrasion
   materials, 81.40.Pq
   mechanics, 46.55.+d
Absorption
   acoustical
     architectural acoustics, *43.55.Ev, *43.55.Nd
     linear acoustics, *43.20.Hq
     nonlinear acoustics, *43.25.Ed
     underwater, *43.30.Es, *43.30.Ky
   of electromagnetic radiation
     in Earth's atmosphere, 42.68.Ay, 92.60.Ta
     in plasmas, 52.25.Os
   of laser light in plasmas, 52.38.Dx
   multiphoton, by surfaces, 79.20.Ws
   neutron, 28.20.Fc
   optical, 42.25.Bs
   of particles in plasmas, 52.25.Tx
   of photons by nuclei, 25.20.Dc
Absorption coefficients, optical, 78.20.Ci
Absorption edges, x-ray, 78.70.Dm
Absorption spectra
   of atoms, 32.30.-r
   of biomolecules, 87.15.M-
   of clusters, 36.40.Mr
   of excitons, 71.35.Cc
   of macro- and polymer molecules, 36.20.Kd
   of molecules, 33.20.-t
   of solids and liquids, 78.40.-q
```

TOP

```
disordered solids, 78.40.Pg
     fullerenes, 78.40.Ri
     liquids, 78.40.Dw
     metals, semimetals, and alloys, 78.40.Kc
     nonmetallic inorganics, 78.40.Ha
     organic compounds and polymers, 78.40.Me
     semiconductors, 78.40.Fy
Absorption spectroscopy
   in biophysics, 87.64.K-
   chemical analysis, 82.80.Dx
   instrumentation, 07.57.Ty, 07.60.Rd
Abstraction reactions, 82.30.Hk
Accelerated beams, in plasmas, 52.59.Bi, 52.59.Fn
Accelerated plasmas, 52.59.Dk
Acceleration
   laser-driven, 41.75.Jv
   by laser-plasma interactions, 52.38.Kd
   measurement of, 06.30.Gv
   of particles in interplanetary space, 96.50.Pw
Accelerators, 29.20.-c
   cyclic, 29.20.D-
   electrostatic, 29.20.Ba
   linear, 29.20.Ej
   in radiation therapy, 87.56.bd
Accidents (nuclear reactors), 28.41.Te
Accommodation, gas dynamics, 47.45.Gx
Accretion and accretion disks
   galactic, 98.62.Mw
   Milky Way, 98.35.Nq
   stellar, 97.10.Gz
Acids (bioproduct from biomass), 88.20.rm
Acoustical holography, *43.35.Sx, *43.60.Sx
Acoustical instruments and techniques, 07.64.+z, *43.58.-e, 43.58.+z
Acoustical properties
   gases, 51.40.+p
   liquids, 62.60.+v
   rocks and minerals, 91.60.Lj
   solids, 62.65.+k
   of solid surfaces and interfaces, 68.35.lv
   superconductors, 74.25.Ld
   thin films, *43.35.Ns, 68.60.Bs
Acoustic array systems, *43.60.Fg
```

```
Acoustic emission, *43.40.Le
Acoustic force microscopy, 68.37.Tj
Acoustic impedance, *43.20.Rz
   architectural acoustics, *43.55.Ev
   of ground, snow, and ice, *43.28.En
Acoustics
   architectural, *43.55.-n, 43.55.+p
   ASA Web page, *43.05.Gv
   atmospheric, *43.28.-g, 43.28.+h
     numerical methods for, *43.28.Js
     statistical characteristics, *43.28.Lv
   biological, *43.80.-n, 43.80.+p
   forensic, *43.72.Uv
   linear, *43.20.-f, 43.20.+g
   nonlinear, *43.25.-x, 43.25.+y
   physiological, *43.64.-q, 43.64.+r
   psychological, *43.66.-x, 43.66.+y
   ray, *43.20.Dk
   structural, *43.40.-r, 43.40.+s
   underwater, *43.30.-k, 43.30.+m
Acoustic sensing, *43.60.Vx
Acoustic signal coding, *43.60.Ek
Acoustic signal processing, *43.60.-c, 43.60.+d
Acoustics Research Letters Online (ARLO), *43.05.Gv
Acoustic streaming, *43.25.Nm
Acoustic tomography, *43.35.Wa, *43.60.Rw
Acoustic transduction, 43.38.+n, *43.38.-p
Acoustoelectric effects
   conductivity phenomena, 72.50.+b
   in piezoelectrics, 77.65.Dq
   thin films, 73.50.Rb
Acousto-optical devices, 42.79.Jq
Acousto-optical effects, *43.35.Sx, 78.20.hb
Activation analysis, radiochemical, 82.80.Jp
Adaptation, visual
   color, 42.66.Ne
   light, 42.66.Lc
Adaptive acoustical systems, *43.60.Mn
Adaptive optical systems
   astronomy, 95.75.Qr
   atmospheric optics, 42.68.Wt
Addenda, 99.10.Qr
```

```
Adhesion
   cellular, 87.17.Rt
   interfacial flow, 83.50.Lh
   mechanical contacts (structural mechanics), 46.55.+d
   of polymers on surfaces, 82.35.Gh
   at solid surfaces and interfaces, 68.35.Np
Adhesives (bioproduct from biomass), 88.20.rp
Admittance measurement, 84.37.+q
Adsorbates
   assemblies of, 68.43.Hn
   diffusion of, 68.43.Jk
   electron states, 73.20.Hb
   femtochemistry of, 82.53.St
   photoelectron spectra, 79.60.Dp
   statistical mechanics of, 68.43.De
   structure and reactions of, 68.43.Bc, 68.43.Fg
   vibrations of, 68.43.Pq
Adsorption
   on fluid interfaces, 68.03.-g
   kinetics of, 68.43.Mn
   at solid surfaces, 68.43.-h
Advanced vehicles
   alternative fuels for, 88.85.M-
      biodiesel, 88.85.mb
     ethanol, 88.85.mj
     fuel blends, 88.85.mn
     hydrogen, 88.85.mh
     natural gas, 88.85.mf
      propane, 88.85.md
   electric vehicles (EVs), 88.85.Hj
   fuel cell vehicles (FCVs), 88.85.Cd
   fueling stations for, 88.85.Pq
   plug-in hybrid vehicles (HEVs), 88.85.Fg
   vehicle energy storage, 88.85.J-
     lead-acid batteries, 88.85.jk
      nickel-metal-hydride batteries, 88.85.jm
     ultracapacitors, 88.85.jp
Aeroacoustics, *43.28.-g, 43.28.+h
Aerodynamics, 47.85.Gj
Aeroelasticity, 46.40.Jj
Aerogels, reactions in, 82.33.Ln
Aerosols
```

```
in atmosphere, 92.60.Mt
   atmospheric optics, 42.68.Jg
   interactions with space plasma, 94.05.Bf
   in materials synthesis, 81.20.Rg
   oceanography of, 92.20.Bk
   paleoceanography, *92.30.Ef
   physical chemistry, 82.70.Rr
   plasma interactions (ionosphere), 94.20.wl
Africa, 93.30.Bz
Afterglow (plasma reactions), 82.33.Xi
Aggregation
   of cells, 87.18.Ed
   diffusion-limited, 61.43.Hv
   in solutions of macromolecules (biomolecules), 87.15.nr
Aging (of materials), 81.40.Cd
Agriculture
   agricultural residues as biomass source, 88.20.dj
   biogeosciences, *91.62.Bf
   energy use in, 88.05.Qr
Aharonov-Bohm effect
   mesoscopic systems, 73.23.-b
   quantum mechanics, 03.65.Ta
Airglow, 92.60.hw
Air pollution
   atmospheric chemistry, 82.33.Tb
   atmospheric optics, 42.68.Kh
   meteorology, 92.60.Sz
Air transportation, 89.40.Dd
Alfven waves, 52.35.Bj
Algebra
   Lie, 02.20.Sv
   linear, 02.10.Ud
   matrix, 02.10.Yn
Algebraic geometry, 02.10.-v
Algebraic groups, 02.20.Hj
Algebraic methods
   in quantum mechanics, 03.65.Fd
   in string theory, 11.25.Hf
Algebraic rings, 02.10.Hh
Algebraic structures, 02.10.De
Algebraic topology, 02.40.Re
Alkali halides, photoluminescence of, 78.55.Fv
```

```
Alkali metals, electronic structure of, 71.20.Dg
Alloys
   absorption spectra, 78.40.Kc
   diamagnetism and paramagnetism, 75.20.En
   electronic conduction
     bulk matter, 72.15.Cz, 72.15.Eb
     liquid, 72.15.Cz
     thin films, 73.61.At
   electronic structure, 71.20.Be, 71.20.Eh, 71.20.Gj
   fabrication, 81.05.Bx
   impurity and defect levels, 71.55.Ak
   infrared and Raman spectra, 78.30.Er
   liquid
     structure of, 61.25.Mv
   local magnetic moment, 75.20.Hr
   materials for magnetotransport, 75.47.Np
   optical properties of thin films, 78.66.Bz
   phase diagrams, 81.30.Bx
   radiation effects, 61.82.Bg
   self-diffusion, 66.30.Fq
   structure
     amorphous, 61.43.Dq
     crystalline, 61.66.Dk
   superconducting, 74.70.Ad
AIN films (dielectric films), 77.55.hd
Alpha Cygni stars, 97.30.Dg
Alpha decay, 23.60.+e
Alpha-particle-induced nuclear reactions, 25.55.-e
ALS (degenerative diseases), 87.19.xr
Alzheimer's disease, 87.19.xr
Amorphous magnetic materials, 75.50.Kj
Amorphous metals and alloys
   electrical and thermal conduction, 72.15.Cz
   electron density of states, 71.23.-k
   photoelectron spectra, 79.60.Ht
   structure, 61.43.Dq
   thermal properties, 65.60.+a
Amorphous semiconductors
   electronic structure, 71.23.Cq
   fabrication, 81.05.Gc
   impurity and defect levels, 71.55.Jv
   infrared and Raman spectra, 78.30.Ly
```

```
photoelectron spectra, 79.60.Ht
   photoluminescence, 78.55.Qr
   structure of, 61.43.Dq
   surface structure of, 68.35.bj
   synthesis, 81.05.Gc
   thermal properties, 65.60.+a
   thin films
     electrical conductivity, 73.61.Jc
     optical properties, 78.66.Jg
Amorphous superconductors, 74.81.Bd
Amphiphilic systems, 82.70.Uv
Amplifiers
   electronic, 84.30.Le
   laser, 42.60.Da
   optical parametric, 42.65.Yj
Amyloids, 87.14.em
Analytic spaces, 02.30.Fn
Anatomic imaging, MRI, 87.61.Jc
Anatomic MRI (in neuroscience), 87.19.lf
Anchoring (liquid crystals), 61.30.Hn
Anderson localization
   conductivity in metals and alloys, 72.15.Rn
   disordered solids, 71.23.An
   hopping transport, 72.20.Ee
   surface and interface states, 73.20.Fz
Andreev reflection (superconductivity), 74.45.+c
Anelasticity
   materials treatment effects on, 81.40.Jj
   mechanical properties of solids, 62.40.+i
Anemometry, 47.80.Fg
Angiography, 87.59.Dj
Angles, measurement of, 06.30.Bp
Angular velocity measurement, 06.30.Gv
Anharmonic lattice modes, 63.20.Ry
Anisotropic media, 81.05.Xj
Annealing
   crystal defects, 61.72.Cc
   effects on microstructure, 81.40.Ef
   magnetic, 75.60.Nt
Announcements, 01.10.Cr
Anodic films, 82.45.Cc
Anoxic environments
```

```
biogeosciences, *91.62.De
   oceanography, 92.20.Hs
Antarctica, 93.30.Ca
Antennas, 84.40.Ba
   plasma interactions with, 52.40.Fd
Anthropogenic effects
   environmental studies of, 89.60.Gg
   in hydrology, 92.40.Aa
   in paleoceanography, *92.30.De
Anthropology, 89.65.Ef
Antibunched photon states, 42.50.Dv
Antiferroelectricity, 77.80.-e
Antiferroelectric materials, 77.84.-s
Antiferromagnetic materials, 75.50.Ee
Antiferromagnetic resonance, 76.50.+g
Antiprotonic atoms and molecules, 36.10.Gv
Antiproton-induced reactions, 25.43.+t
Antireflection coatings, 42.79.Wc
Anyons
   electronic structure, 71.10.Pm
   nonconventional mechanisms in superconductivity, 74.20.Mn
   quantum statistical mechanics, 05.30.Pr
Apertures, optical, 42.79.Ag
Appliances, energy use in, 88.05.Rt
Apodization, 42.15.Eq
APW calculations, 71.15.Ap
Aquifers (ground water), 92.40.Kf, *92.40.kh
Arc discharges, 52.80.Mg
Archaeoastronomy, 95.90.+v
Archean period, *91.70.hf
Archeomagnetism, 91.25.Dx
Architectural acoustics, *43.55.-n, 43.55.+p
Arctic Ocean, 93.30.Li
Arc welding, 52.77.Fv
Arms control, 89.20.Dd
Arrays
   fiber optical, 42.81.Qb
   integrated optics, 42.82.Et
   laser, 42.60.Da
   solar cells, 84.60.Jt
Artificial intelligence, 07.05.Mh
Artificial satellites, 07.87.+v, 95.40.+s, 95.55.Pe
```

```
ASA (atomic sphere approximation), 71.15.Ap
Ash deposits, 91.40.Bp
Asia, 93.30.Db
Associated liquids, structure of, 61.20.Qg
Association reactions, chemical, 82.30.Nr
Associative rings and algebras, 02.10.Hh
Asteroids, 96.30.Ys
Astrobiology, *91.62.Fc, 96.55.+z
Astrometric binary stars, 97.80.Af
Astrometry, 95.10.Jk
   instrumentation, 95.55.Br
Astron (magnetic trap), 52.55.Lf
Astronomy databases, 95.80.+p
Astrophysical plasma, 95.30.Qd
   laboratory studies, 52.72.+v
Asymptotic normalization coefficients, 21.10.Jx
Atlantic Ocean, 93.30.Mj
Atmosphere
   comets, *96.25.F-, 96.25.Fx
   Earth
     biosphere/atmosphere interactions, *91.62.Xy
     effects of volcanic eruptions, 91.40.Dr
     global change, 92.70.Cp
     ionosphere, 94.20.-y
     land/atmosphere interactions, 92.60.Kc, 92.70.Bc
     magnetosphere, 94.30.-d
     ocean/atmosphere interactions, 92.60.Cc
     troposphere, 92.60.hf
   Moon, 96.20.Dt
   planetary
     fluid planets, *96.15.H-, 96.15.Hy
     solid surface planets, *96.12.J-, 96.12.Jt
   stellar, 97.10.Ex
Atmosphere/ocean/Earth interaction, 91.10.Vr
Atmospheric acoustics, *43.28.-g, 43.28.+h
Atmospheric chemistry, 82.33.Tb
   meteorology, 92.60.hf
Atmospheric electricity
   in Earth's atmosphere, 92.60.Pw
   in plasmas, 52.80.Mg
Atmospheric ion precipitation, 94.20.Qq, 94.30.Hn
Atmospheric optics, 42.68.-w
```

```
cloud optics, 42.68.-w, *92.60.nc
Atmospheric pressure, 92.60.hv
Atom-surface collisions, 34.35.+a, 79.20.Rf
Atomic beam epitaxy, 81.15.Hi
Atomic beams
   chemical reactions, 34.50.Lf
   detectors for, 07.77.-n
   interactions with solids, 79.20.Rf
   irradiation effects, 61.80.Lj
   sources of, 07.77.Gx, 37.20.+j
   in structure determination, 61.05.Np
Atomic clusters, 36.40.-c
Atomic force microscopy
   in biophysics, 87.64.Dz
   instrumentation, 07.79.Lh
   in surface structure determination, 68.37.Ps
Atomic forces, 34.20.-b
Atomic isotopes, 32.10.Bi
Atomic mass, 32.10.Bi
Atomic moments, 32.10.Dk
Atomic-orbital methods
   atoms and molecules, 31.15.xr
   solids, 71.15.Ap
Atomic properties, 32.10.-f
Atomic spectra, 32.30.-r
   astrophysics, 95.30.Ky
Atomic sphere approximation (ASA), 71.15.Ap
Atom interferometry, 03.75.Dg, 37.25.+k
Atom lasers, 03.75.Pp
Atom manipulation
   in atomic physics, 37.10.De, 37.10.Gh
   in nanotechnology, 81.16.Ta
   in physical chemistry, 82.37.Gk
Atom-molecule potentials and forces, 34.20.Gj
Atom optics, 03.75.Be
Atoms
   in cavities, 37.30.+i
   collisions in plasma, 52.20.Hv
   cooling and trapping, 37.10.De, 37.10.Gh
   electric and magnetic moments, 32.10.Dk
   electron affinity, 32.10.Hq
   electronic structure
```

```
calculations of, 31.15.-p
     theory of, 31.10.+z
   excitation and ionization by electron impact, 34.80.Dp
   exotic, 36.10.-k
   hot atom reactions, 82.30.Cf
   ionization potential, 32.10.Hq
   polarizability, 32.10.Dk
   scattering, 34.50.-s
     from surfaces, 34.35.+a, 68.49.Bc
Audio and visual aids, educational, 01.50.F-
Auditory system, *43.64.-q, 43.64.+r, 87.19.lt
Auger effect
   atoms, 32.80.Hd
   solids, 79.20.Fv
Auger microscopy, 68.37.Xy
Auger spectroscopy, 82.80.Pv
Augmented plane-wave (APW) calculations, 71.15.Ap
Aurorae, 92.60.hw, 94.20.Ac, 94.30.Aa
Australia, 93.30.Fd
Autoionization
   atoms, 32.80.Zb
   molecules, 33.80.Eh
Avalanche counters, 29.40.Cs
Avalanches
   phase transitions in, 64.60.av
Avalanches (granular systems), 45.70.Ht
Aviation fuel from biomass, 88.20.fw
Awards, 01.10.Cr
Axial vector currents, 11.40.Ha
Axiomatic field theory, 11.10.Cd
Axions, 14.80.Va
Axons, action potential propagation in, 87.19.lb
Background radiation, cosmic, 98.70.Vc
Backscattering. See Scattering
Bacteria
   seawater, 92.20.Jt, *92.20.jb
   swimming of, 47.63.Gd
Bacterial diseases, 87.19.xb
Bag model, 12.39.Ba
Balance systems, 07.10.Lw
Ballistics, 45.40.Gj
Ballistic transport, 73.23.Ad
```

```
Ballooning instability, 52.35.Py
Balloons (meteorology), 92.60.-e
Band model of magnetism, 75.10.Lp
Band structure, 71.20.-b
Barkhausen effect (magnetic properties and materials), 75.60.Ej
Baryon number, 11.30.Fs
Baryon resonances, 14.20.Gk
Baryons
   bottom baryons, 14.20.Mr
   charmed baryons, 14.20.Lq
   decays of, 13.30.Eg
   exotic baryons, 14.20.Pt
   production of, 13.60.Rj
   properties of, 14.20.-c
   resonances, 14.20.Gk
Bathymetry, 91.50.Ga
BaTiO<sub>3</sub>-based dielectric films, 77.55.fe
Batteries
   lead-acid, nickel-metal hydride, 82.47.Cb
   lithium-ion, 82.47.Aa
BCS theory (superconductivity), 74.20.Fg
Beach processes (marine geology), 91.50.Cw
Beamfoil excitation and ionization, 34.50.Fa
Beam injection
   electron and ion optics, 41.85.Ar
   in particle accelerators, 29.27.Ac
Beam optics (charged-particle beams), 41.85.-p
Beam-plasma instabilities, 52.35.Qz
Beams
   structural acoustics, *43.40.Cw
   structural mechanics, 46.70.De
Beams, charged-particle
   in accelerators, 29.27.-a
   electron, 41.75.Fr, 41.75.Ht
   interactions with plasma, 52.40.Mj
   ion, 41.75.Ak, 41.75.Cn
   positron, 41.75.Fr, 41.75.Ht
   relativistic electron and positron, 41.75.Ht
Beams, photon
   laser, 42.60.-v
   x-ray, 41.50.+h
Beam splitters and deflectors
```

```
electron and ion optics, 41.85.Ct
   optical, 42.79.Fm
Beam trapping (nonlinear optics), 42.65.Jx
Bearings, 06.60.Vz, 07.10.-h
Bell inequalities, 03.65.Ud
Benthic processes
   marine geology, 91.50.Ey
   oceanography, 92.10.Oc, 92.20.lv
Bernstein waves, 52.35.Hr
Berry's phase, 03.65.Vf
Bessel functions, 02.30.Gp
Beta Cephei stars, 97.30.Dg
Beta decay, 23.40.-s
Betatrons, 29.20.df
Bethe-Salpeter equations, 11.10.St
BGK modes (in plasma), 52.35.Sb
Bianisotropic media, 81.05.Xj
Bibliographies, 01.30.Tt
Bifurcation
   chemical reactions, 82.40.Bj
   flow instabilities, 47.20.Ky
   nonlinear dynamics, 05.45.-a
   theory, 02.30.Oz
Big Bang nucleosynthesis, 26.35.+c
Big Bang theory, 98.80.Bp
Bilayers
   in subcellular structure, 87.16.D-
Binary stars, 97.80.-d
   accreting binary systems
     explosive burning in, 26.30.Ca
   black hole binaries
     general relativity, 04.25.dg
Binding energy
   molecular core, 33.15.Ry
   nuclear, 21.10.Dr
   solids, 71.15.Nc
Bingham fluids (rheology), 83.60.La
Binocular vision, 42.66.Si
Bioacoustics, *43.80.-n, 43.80.+p
   biological effects of acoustic and ultrasonic radiation, 87.50.Y-
Biochemistry, 87.15.R-
   in nanofabrication, 81.16.Fg
```

```
Biocompatibility, of biomaterials, 87.85.jj
Biodiesel
   from biomass energy, 88.20.fk
   for advanced vehicles, 88.85.mb
Biodiversity, *91.62.Gk
Bioelectrochemistry, 82.45.Tv, 87.15.Tt
Bioethers as fuel from biomass, 88.20.fv
Biofilms, 87.18.Fx
Biogeochemical cycles
   oceanography, 92.20.Sg
   paleoceanography, *92.30.Gh
Biogeochemical processes, global, 92.70.-j
Biogeosciences, 91.62.+g
Biographies, 01.60.+q
Biological complexity, 87.18.-h
   biofilms, 87.18.Fx
   cell aggregation, 87.18.Ed
   cell-cell communication, 87.18.Gh
   genetic switches, 87.18.Cf
   integrative biophysics, 87.18.Nq
   multicellular phenomena, 87.18.Fx
   neural networks, 87.18.Sn
   noise in, 87.18.Tt
   pattern formation, 87.18.Hf
   systems biology, 87.18.Vf
Biological fluid dynamics, 47.63.-b, 87.85.gf
Biological physics
   general theory of, 87.10.-e
   spectroscopic and microscopic techniques, 87.64.-t
Biological signal transduction
   intracellular signaling, 87.16.Xa
   multicellular, 87.18.Mp
Biological systems
   acoustic and ultrasonic radiation effects, 87.50.Y-
     dosimetry/exposure assessment, 87.50.yk
     interaction mechanisms, 87.50.yg
     therapeutic applications, 87.50.yt
   chemical kinetics in, 82.39.-k, 87.15.R-
   electric and magnetic fields effects, 87.50.C-
     dosimetry/exposure assessment, 87.50.cm
     electrophoresis, 87.50.ch
     electroporation, 87.50.cj
```

```
interaction mechanisms, 87.50.cf
     therapeutic applications, 87.50.ct
   ionizing radiation effects, 87.53.-j
     brachytherapy, 87.53.Jw
     dosimetry/exposure assessment, 87.53.Bn
     interaction mechanisms, 87.53.Ay
     therapeutic applications, 87.53.Jw
    millimeter and terahertz radiation effects, 87.50.U-
     dosimetry/exposure assessment, 87.50.up
     interaction mechanisms, 87.50.uj
     therapeutic applications, 87.50.ux
   optical and infrared radiation effects, 87.50.W-
     dosimetry/exposure assessment, 87.50.wj
     interaction mechanisms, 87.50.wf
     therapeutic applications, 87.50.wp
   radiofrequency and microwave radiation effects, 87.50.S-
     dosimetry/exposure assessment, 87.50.sj
     interaction mechanisms, 87.50.sg
     therapeutic applications, 87.50.st
Biological tissues
   electrical and mechanical properties of, 87.19.R-
   flow through, 47.63.Jd, 87.19.rh, 87.85.gf
   tissue engineering, 87.85.Lf
Biomass
   biofuels (renewable alternative fuels)
      bioaviation fuel, 88.20.fw
     biodiesel, 88.20.fk
     bioethers, 88.20.fv
      butanol, 88.20.fh
     ethanol, 88.20.ff
     hydrogen, 88.20.fn
      markets for, 88.20.T-
      methane
       as renewable biofuel, 88.20.fq
       production, general and miscellaneous, 88.20.G-
       production from anaerobic digestion, 88.20.gh
       production from decaying organic matter, 88.20.gf
       production from Fischer-Tropsch liquids, 88.20.gc
      methanol, 88.20.fg
      mixed alcohols, 88.20.fj
      solid palletized fuel, 88.20.fr
      syngas, 88.20.fs
```

```
vegetable oils, 88.20.ft
   biopower systems, 88.20.M-
     cofiring systems, 88.20.mp
     direct-firing systems, 88.20.mn
     gasification systems; syngas, 88.20.mr
      paper mills, 88.20.mv
      pyrolysis to liquids, 88.20.mt
   bioproducts from, 88.20.R-
      acids, 88.20.rm
     foam insulation, 88.20.rr
     glues, 88.20.rg
      plastics, 88.20.rb
     wood adhesives, 88.20.rp
   conversion methods, 88.20.J-
     combustion, 88.20.jj
     extraction and esterification, 88.20.jp
      hydrolysis and fermentation, 88.20.jm
      photosynthetic pathways, 88.20.jr
   energy sources of, 88.20.D-
     agriculture/forestry residues, 88.20.dj
     aquatic/marine sources, 88.20.dm
     cellolusic materials, 88.20.dp
     food crops, 88.20.df
     food wastes, 88.20.dr
     grassy and woody plants, 88.20.dh
     methane from landfills, 88.20.dv
     municipal and industrial wastes, 88.20.dt
     wood, 88.20.dd
    processing routes for, 88.20.H-
      biochemical route, 88.20.hh
     thermochemical route, 88.20.hj
   social issues in, 88.20.Y-
     food versus fuel debate, 88.20.yq
Biomaterials
   bio-based materials, 87.85.jf
   biocompatibility of, 87.85.jj
   biofuels, 88.20.F-
   in biomedical engineering, 87.85.J-
   physical properties of, 87.85.jc
   bioproducts from biomass, 88.20.R-
Biomechanics
   in biomedical engineering, 87.85.G-
```

```
mechanical systems in, 87.85.gp
   movement and locomotion, 87.85.gj
Biomedical engineering
   applied neuroscience, 87.85.D-
   biological signal processing, 87.85.Ng
   biomaterials, 87.85.J-
   biomechanics in, 87.85.G-
   biomedical imaging techniques in, 87.85.Pq
   biomedical instruments, 87.85.Ox
   biotechnology, 87.85.M-
   integrative biology, 87.85.Xd
   MEMS in, 87.85.Ox
   micromachining in, 87.85.Va
   micromanipulators in, 87.85.Uv
   modeling of biomedical systems, 87.85.Tu
   nanotechnologies in, 87.85.Qr, 87.85.Rs
   neural prosthetics, 87.85.E-
   regulatory biology, 87.85.Xd
   robotics in, 87.85.St
   smart prosthetics, 87.85.F-
   tissue engineering, 87.85.Lf
Biomolecular electronics, 85.65.+h
Biomolecules
   aggregates of, 87.15.bk
   biopolymers, 82.35.Pq, 87.15.rp
   chemical kinetics, 82.39.-k, 87.15.R-
   NMR of, 82.56.Pp
   sequence analysis of, 87.15.Qt
   structure and physical properties, 87.15.-v
   on surfaces, 68.47.Pe
Biophysical techniques, 87.80.-y
   biochemical separation processes, 87.80.Qk
   electrochemical techniques, 87.80.Kc
   ESR/EPR techniques, 87.80.Lg
   genomic techniques, 87.80.St
   magnetic resonance techniques, 87.80.Lg
   mechanical and micromechanical techniques, 87.80.Ek
   Proteomic techniques, 87.80.Un
   single-molecule techniques, 87.80.Nj
   spectroscopies in, 87.80.Dj
```

Biopolymers, 82.35.Pq, 87.15.rp

Biopropulsion (in water and air), 47.63.M-

```
Bioremediation, *91.62.Jf
Biosensors
   in smart prosthetics, 87.85.fk
Biosonic generation, *43.80.Ka
Biosphere (chemical composition), *91.67.gj
Biotechnology
   genetic engineering, 87.85.md
   genomics techniques in, 87.80.St, 87.85.mg
   proteomics techniques in, 87.80.Un, 87.85.mk
Biothermics, 87.19.Pp
Bipolarons
   electronic structure of solids, 71.38.Mx
   nonconventional mechanisms in superconductivity, 74.20.Mn
Bipolar outflows
   external galaxies, 98.58.Fd
   Milky Way, 98.38.Fs
   pre-main-sequence objects, 97.21.+a
Bipolar transistors, 85.30.Pq
Birefringence
   in bulk materials and thin films, 78.20.Fm
   in optical fibers, 42.81.Gs
   in wave optics, 42.25.Lc
Bistability, optical, 42.65.Pc
Blackbody radiation, 44.40.+a
Black holes
   black-hole binaries, 04.25.dg
   classical, 04.70.Bw
   evaporation of, 04.70.Dy
   in external galaxies, 98.62.Js
   higher-dimensional, 04.50.Gh
   in Milky Way, 98.35.Jk
   numerical relativistic studies of, 04.25.dg
   in stellar evolution, 97.60.Lf
Black strings (general relativity), 04.50.Gh
Blast waves, *43.28.Mw
Blazars, 98.54.Cm
Blood
   blood-brain barrier, 87.19.um
   flow imaging by MRI, 87.61.Np
   flow in cardiovascular system, 47.63.Cb, 87.19.ug, 87.19.uj
   hemodynamics, 87.19.U-
   rheology of, 83.80.Lz, 87.19.rh, 87.85.gf
```

```
Blue phases (liquid crystals), 61.30.Mp
Blue stars, blue stragglers, 97.20.Rp
Body fluids
   transport of, 87.19.rh
Body movements, physics of, 87.19.rs, 87.19.ru
Body waves (seismology), 91.30.Cd
Boiling, 64.70.fh
Bok globules, 97.21.+a
Bolometers
   infrared detectors in astronomy, 95.55.Rg
   instruments, 07.57.Kp
Bond angles and bond lengths, 33.15.Dj, 61.50.Lt
Bonds, dangling, 61.43.-j
Bond strength, 33.15.Fm
Bone densitometry, 87.63.St
Book reviews, 01.30.Vv
Books of general interest to physics teachers, 01.30.Os
Borides
   dielectric materials, 77.84.Bw
   refractories, 81.05.Je
Born-Oppenheimer approximation, 31.30.-i
Borocarbides, superconductivity of, 74.70.Dd
Boron nanotubes
   structure of, 61.48.De
Bose-Einstein condensates, 67.85.Hj, 67.85.Jk
Bose-Einstein condensation
   dynamic properties, 03.75.Kk
   entanglement and decoherence, 03.75.Gg
   multicomponent and spinor condensates, 03.75.Mn
   quantum optics, 42.50.Gy
   solitons, 03.75.Lm
   static properties, 03.75.Hh
   tunneling, 03.75.Lm
   vortices in, 03.75.Lm
Bose-Einstein statistics, 05.30.-d
Boson degeneracy
   in quantum fluids, 67.10.Ba
Bosons
   gauge, 14.70.-e
   Higgs, 14.80.Bn, 14.80.Da, 14.80.Ec, 14.80.Fd
   interacting boson model, 21.60.Fw
   intermediate, decays of, 13.38.-b
```

```
Nambu-Goldstone, 14.80.Va
Boson systems, 05.30.Jp
Bottom baryons, 14.20.Mr
Bottom mesons
   hadronic decays, 13.25.Hw
   leptonic decays, 13.20.He
   properties of, 14.40.Nd
Bottom quarks, 14.65.Fy
Boundary layer
   laminar flow, 47.15.Cb
Boundary layers
   benthic (oceanography), 92.10.Oc, 92.20.lv
   flow control, 47.85.ld
   instability of, 47.20.lb
   meteorology, 92.60.Fm
   in plasmas, 52.40.Hf
   sea-air, 92.10.Kp
   turbulence, 47.27.nb
Boundary-value problems
   in electrostatics, 41.20.Cv
   in magnetostatics, 41.20.Gz
   numerical analysis, 02.60.Lj
Bound states
   field theory, 11.10.St
   magnetic bound states in atoms, 32.10.Ee
   potential energy surfaces, 31.50.-x
   quantum mechanics, 03.65.Ge
Brachytherapy, 87.53.Jw
Bragg reflectors, 42.79.Dj
Brain-machine interface
   in applied neuroscience, 87.85.dd
Branes, 11.25.-w
   D branes, 11.25.Uv
   M theory, 11.25.Yb
Breakdown, electrical
   dielectrics, 77.22.Jp
   gases, 51.50.+v
Breeder reactors, 28.50.Ft
Bremsstrahlung, 03.50.-z, 41.60.-m, 78.70.Ck
Bright field optical microscopy, in biophysics, 87.64.mc
Brillouin scattering
   condensed matter, 78.35.+c
```

```
molecular spectra, 33.20.Fb
   nonlinear optics, 42.65.Es
   plasma, 52.38.Bv
Brillouin zones, 61.50.Ah, 71.20.-b
Brittleness
   nanoscale systems, 62.25.Mn
   structural failure of materials, 62.20.mj
Broken symmetry phases (nanoscale materials), 73.22.Gk
Brown dwarfs, 97.20.Vs
Brownian motion, 05.40.Jc
   in rheology, 83.10.Mj
Bubble chambers, 29.40.-n
Bubbles
   dynamics
     in boiling, 64.70.fh
     in multiphase flow, 47.55.dd
   magnetic, 75.70.Kw
   nonlinear acoustics, *43.25.Yw
Buckling
   fission reactors, 28.41.Ak
   materials treatment effects, 81.40.Lm
   static, 46.32.+x
   structural failure of materials, 62.20.mq
Buckyballs. see Fullerenes
Bumpy tori, 52.55.Hc
Buoyancy-driven flows
   convection, 47.55.P-
   flow instabilities, 47.20.Bp
Bursts
   galactic jets, 98.62.Nx
   gamma-ray, 98.70.Rz
   solar, 96.60.qe
   x-ray, 98.70.Qy
Business and management, 89.65.Gh
Butanol (from biomass), 88.20.fh
Cables
   electrical, 84.70.+p
   fiber-optical, 42.81.Qb
   superconducting, 84.71.Fk
Calculus
   operational, 02.30.Vv
   of variations, 02.30.Xx
```

```
Calderas (volcanology), 91.40.Wx
Calendars, astronomical, 95.10.Km
Calibration, 06.20.fb
Callisto, 96.30.lh
Calorimeters, 07.20.Fw
   radiation detectors, 29.40.Vj
Cambrian period, *91.70.fn
Cameras, photographic, 07.68.+m
Cancer, 87.19.xj
Capacitance measurement, 84.37.+q
Capacitor banks (energy storage), 84.60.Ve
Capacitors, 84.32.Tt
   electrochemical, 82.47.Uv
Capillary effects (interfacial flows), 47.55.nb
Capillary waves
   fluid flow, 47.35.Pq
   fluid interfaces, 68.03.Kn
   ocean waves, *92.10.hd
Carbides
   dielectric materials, 77.84.Bw
   refractories, 81.05.Je
Carbohydrates, 87.14.Df
Carbon, 81.05.U-
Carbon-based materials
   diamond, 81.05.ug
   diamond/nanocarbon composites, 81.05.uj
   fullerenes, 81.05.ub
   graphene, 81.05.ue
   graphite, 81.05.uf
   superconducting materials, 74.70.Wz
Carbon cycling
   biogeosciences, *91.62.La
   oceans, 92.20.Xy
Carbon dioxide lasers, 42.55.Lt
Carboniferous period, *91.70.fd
Carbon nanotubes
   structure of, 61.48.De
Carbon stars, 97.30.Hk
Cardiac dynamics, 87.19.Hh
Cardiovascular system (blood flow), 47.63.Cb, 87.19.ug, 87.19.uj
Careers in science, 01.85.+f
Car-Parrinello method, 71.15.Pd
```

```
CARS, 42.65.Dr
Cartography, 91.10.Da
Catalysis
   electrochemistry, 82.45.Jn
   enzymatic, 87.15.R-
   heterogeneous, 82.65.+r
   homogeneous, 82.30.Vy
   in nanotechnology, 81.16.Hc
Catastrophe theory, 05.45.-a
Cathode-ray tubes, 84.47.+w
Cathodoluminescence, 78.60.Hk
Causal structure (general relativity), 04.20.Gz
Cavitation
   acoustics, *43.25.Yw, *43.35.Ei
   nonhomogeneous flows, 47.55.dp
Cavity quantum electrodynamics, 42.50.Pq
Cavity resonators
   fiber optics, 42.81.Qb
   integrated optics, 42.82.Et
   laser, 42.60.Da
   optical, 42.79.Gn
Celestial mechanics
   astronomy, 95.10.Ce
   classical mechanics, 45.50.Pk
Cell adhesion, 87.17.Rt
Cell aggregation, 87.18.Ed
Cell division, 87.17.Ee
Cell mechanics, 87.17.Rt
Cell processes, 87.17.-d
   biotechnology of, 87.17.Uv
   cell adhesion, 87.17.Rt
   cell locomotion, 87.17.Jj
   chemotaxis in, 87.17.Jj
   growth and division, 87.17.Ee
   morphogenesis, 87.17.Pq
   theory and modeling of, 87.17.Aa
Cells on a chip
   in applied neuroscience, 87.85.dh
Cellular engineering, 87.85.Lf
Cell walls
   in subcellular structure and processes, 87.16.Gj
Cenozoic period, *91.70.B-, 91.70.Bf
```

```
Cepheids, 97.30.Gj
Ceramics
   in electrochemistry, 82.45.Xy
   fabrication, 81.05.Je, 81.05.Mh
   PZT ceramics as piezoelectric materials, 77.84.Cg
Cerenkov radiation
   from moving charges, 41.60.Bq
Cermets, fabrication of, 81.05.Mh
Chain reactions, chemical, 82.30.Cf
Chains, macromolecular and polymer, 36.20.Fz
Chalcogenides
   dielectric materials, 77.84.Bw
   noncuprate superconductors, 74.70.Xa
Channel flow, 47.60.Dx
   rheology, 83.50.Ha
Channeling
   in crystals, 61.85.+p
   in laser-plasma interactions, 52.38.Hb
Chaos
   acoustics, *43.25.Rq
   applications of, 05.45.Gg
   astronomy, 95.10.Fh
   chemical reactions, 82.40.Bj
   communication using, 05.45.Vx
   control of, 05.45.Gg
   fluid dynamics, 47.52.+j
   high-dimensional, 05.45.Jn
   low-dimensional, 05.45.Ac
   in nuclear systems, 24.60.Lz
   numerical simulations, 05.45.Pq
   optical, 42.65.Sf
   plasmas, 52.25.Gj
   quantum, 05.45.Mt
   rheology, 83.60.Wc
   in superconductors, 74.40.De
Charge carriers
   semiconductors and insulators, 72.20.Jv
   surfaces, 73.25.+i
   thin films, 73.50.Gr
Charge-coupled devices, 85.60.Gz
   in astronomical instrumentation, 95.55.Aq
Charged clusters, 36.40.Wa
```

```
Charge-density waves
   collective excitations, 71.45.Lr
   one-dimensional conductors, 72.15.Nj
   surface and interface excitations, 73.20.Mf
Charged excitons, 71.35.Pq
Charged Higgs bosons, 14.80.Fd
Charge distribution (nuclear), 21.10.Ft
Charged-lepton interactions with hadrons, 13.60.-r
Charged-particle beams
   in accelerators, 29.27.-a
   beam optics, 41.75.-i, 41.85.-p
   sources and detectors, 07.77.Ka
Charged-particle-induced fission, 25.85.Ge
Charged-particle spectrometers, 29.30.Aj
Charged-particle spectroscopy, 29.30.Ep
Charge-exchange reactions
   in biomolecular reactions, 87.15.R-
   in chemistry, 82.30.Fi
   nuclear reactions
     <sup>2</sup>H-induced, 25.45.Kk
     <sup>3</sup>H-, <sup>3</sup>He-, and <sup>4</sup>He-induced, 25.55.Kr
     heavy-ion reactions (low energy), 25.60.Lg
     nucleon induced, 25.40.Kv
      pion, 25.80.Gn
      unstable-nuclei-induced, 25.60.Lg
Charge measurement, 84.37.+q
Charge transfer
   in atomic and molecular collisions, 34.70.+e
   in biomolecular reactions, 87.15.R-
   in chemical reactions, 82.30.Fi
Charginos, 14.80.Nb
Charmed baryons, 14.20.Lq
Charmed mesons
   hadronic decays, 13.25.Ft
   leptonic and semileptonic decays, 13.20.Fc
   properties of, 14.40.Lb
Charmed quarks, 14.65.Dw
Chemical analysis, 82.80.-d
Chemical beam epitaxy, 81.15.Hi
Chemical bonds, 31.10.+z, 33.15.Fm
   biomolecules, 87.15.Fh
   crystals, 61.50.Lt
```

```
hydrogen bonding, hydrophilic effects, 82.30.Rs
   macro- and polymer molecules, 36.20.Hb
Chemical composition
   biosphere, *91.67.gj
   continental crust, *91.67.gd
   Earth's atmosphere, 92.60.H-
   Earth's interior, 91.35.Lj
   effects on ferroelectric phase transitions, 77.80.bg
   effects on transition temperature (superconductivity), 74.62.Bf
   galaxies, 98.62.Bj
   geochemistry, *91.67.G-, 91.67.Gy
   hydrosphere, *91.67.gh
   materials, 81.05.-t, 82.80.-d
   oceanic crust, *91.67.gf
   of solid surfaces and interfaces, 68.35.Dv
   stars, 97.10.Tk
   Sun, 96.60.Fs
   thin films, 68.55.Nq
Chemical equilibria, 82.60.Hc
Chemical interdiffusion, 66.30.Ny
Chemical kinetics, 82.20.-w, 82.40.-g
   in biological systems, 82.39.-k, 87.15.R-
   single molecule, 82.37.-j
Chemical lasers, 42.55.Ks
Chemically reactive flows, 47.70.Fw
Chemically reactive materials (rheology), 83.50.Jf
Chemical physics. See 82
Chemical processes (astrophysics), 95.30.Ft, 98.38.Bn, 98.58.Bz
Chemical reactions, 82.30.-b, 82.33.-z, 82.35.-x
   of biomolecules, 82.39.-k, 87.15.R-
Chemical sensors, 07.07.Df
Chemical shift (NMR), 33.25.+k, 76.60.Cq, 82.56.-b
Chemical synthesis, 81.20.Ka
    nanofabrication, 81.16.Be
Chemical thermodynamics, 82.60.-s
Chemical vapor deposition, 81.15.Gh
   chemistry of, 82.33. Ya
Chemiluminescence, 78.60.Ps
Chemisorption, 68.43.-h
Chemotaxis, 87.17.Jj
Cherenkov detectors, 29.40.Ka
Cherenkov radiation, 41.60.Bq
```

```
Chern-Simons gauge theory, 11.15.Yc
Chevrel phases, superconductivity of, 74.70.Dd
Chirality
   biomolecules, 87.15.B-
   liquid crystals, 61.30.-v
   optical activity, 33.55.+b, 78.20.Ek
   particle physics, 11.30.Rd
   polymer molecules and macromolecules, 36.20.Ey
Chiral Lagrangians, 12.39.Fe
Chiral media, 81.05.Xj
Chiral symmetries, 11.30.Rd
Chirping, 42.65.Re
Chromatography, 82.80.Bg
Chromodynamics, quantum, 12.38.-t
Chromosomes, 87.16.Sr
Chromosphere, solar, 96.60.Na
Chronometers, 06.30.Ft
Cilia, 87.16.Qp
Circadian rhythms, 87.18.Yt
Circuits
   electronic, 07.50.Ek, 84.30.-r
   integrated, 85.40.-e
   optoelectronic, 42.82.Fv
   passive components, 84.32.-y
   theory of, 84.30.Bv
Circulation
   atmospheric, 92.60.Bh
   oceanic, 92.10.ab
Circumstellar envelopes, 97.10.Fy
Cladding, optical fibers, 42.81.Bm
Classical field theory, 03.50.-z
Classical mechanics
   continuous media, 83.10.Ff
   discrete systems, 45
Clathrates, 82.75.-z
Clebsch-Gordan coefficients, 03.65.-w, 31.10.+z
Climate
   change and variability
     global change
         abrupt/rapid change, 92.70.Aa
     meteorology, 92.60.Ry
     paleoceanography
```

```
abrupt/rapid change, *92.30.Bc
         continental climate records, *92.30.lv
   dynamics
     global change, 92.70.Gt
   global, modeling of, 92.70.Np
   inter-annual variability (oceanography), 92.05.Df
   regional change, 92.70.Kb
Clocks, 06.30.Ft, 95.55.Sh
Clouds
   atmospheric optics, 42.68.Ge
   interstellar, 98.38.Dq
   meteorology, *92.60.N-, 92.60.Nv
   stellar, 97.10.Fy
Cluster model, nuclear structure, 21.60.Gx
Clusters
   atomic and molecular, 36.40.-c
   formation in chemical reactions, 82.30.Nr
   galaxy, 98.65.-r
   hollow molecular
     structure of, 61.48.-c
   phonons in, 63.22.Kn
   reactions in, 82.33.Fg
   reactions on, 82.33.Hk
   reactivity of, 36.40.Jn
   solid
     electronic structure, 73.22.-f
     structure of, 61.46.Bc
   stellar, 98.20.-d
   superfluidity of helium-4 in, 67.25.dw
   in zeolites, 82.75.Vx
Coal, 89.30.ag
Coastal oceanography, 92.10.Sx
Coastal processes, 91.50.Cw
Coatings
   deposition methods, 81.15.-z
   flow in material processing, 47.85.mb
   optical, 42.79.Wc
Coercivity (magnetic materials), 75.50.Vv, 75.60.Ej
Coherence
   in electron and positron scattering, 34.80.Pa
   optical
     quantum optics, 42.50.Ar
```

```
wave optics, 42.25.Kb
   phase coherent atomic ensembles, 03.75.Hh, 03.75.Kk
Coherent anti-Stokes Raman scattering (CARS), 42.65.Dr
Coherent radiation, plasma-generated, 52.59.Ye
Coherent spectroscopy
   femtochemistry, 82.53.Kp
   ultrafast spectroscopy (condensed matter), 78.47.jh
Cohesive energy, crystal, 61.50.Lt, 71.15.Nc
Coils, induction, 84.32.Hh
Cold electron emitters, 85.45.Db
Cold working, 81.40.Ef
Collagen
   biomolecules, 87.14.em
   rheology of, 83.80.Lz
Collective excitations
   clusters, 36.40.Gk
   excitons, 71.35.Lk
   in multilayers, 73.21.Ac
   in nanoscale systems, 73.21.-b
   nuclear structure, 21.10.Re
   one-dimensional conductors, 72.15.Nj
   quantum Hall effects, 73.43.Lp
   in superlattices, 73.21.Cd
   surfaces and interfaces, 73.20.Mf
Collective flow, relativistic collisions, 25.75.Ld
Collective models (nuclei), 21.60.Ev
Collimators
   for beam intensity modifications (medical physics), 87.56.nk
   optics, 42.79.Ag
   radiation therapy, 87.56.J-
Collisions
   atomic and molecular (see 34)
   classical mechanics, 45.50.Tn
   elementary particles (see 13)
   galaxies, 98.65.Fz
   in plasma, 52.20.Hv, 52.20.Fs
Colloids, 82.70.Dd
   complex fluids, 47.57.J-
   glass transitions in, 64.70.pv
   phase separation and segregation in, 64.75.Xc
   rheology of, 83.80.Hj
Color centers
```

```
absorption spectra, 78.40.Fy, 78.40.Ha
   crystal defects, 61.72.jn
   defect states, 71.55.-i
   EPR, 76.30.Mi
Colorimeters, 07.60.Dq
Color-magnitude diagrams
   galaxies, 98.62.Qz
   stars, 97.10.Zr
Color transparency (QCD in nuclei), 24.85.+p
Color vision, 42.66.Ne
Colossal magnetoresistance, 75.47.Gk
Combinatorics, 02.10.0x
Combustion
   biomass conversion by, 88.20.jj
   enthalpy, 82.60.Cx
   reaction kinetics, 82.33.Vx
   reactive flows, 47.70.Pq
Combustion synthesis, 81.20.Ka
Comets
   atmosphere, *96.25.F-, 96.25.Fx
   impact phenomena, 96.25.Pq
   interaction with solar wind, 96.50.Ek
   ionosphere, *96.25.J-, 96.25.Jz
   orbits and rotation, 96.25.De
   origin, 96.25.Bd
   volcanism, 96.25.Xz
Commensurate-incommensurate transformations, 64.70.Rh
Communication
   cell-cell, 87.18.Gh
   forms of, 01.20.+x
   optical, 42.79.Sz
   quantum, 03.67.Hk
   satellites, 84.40.Ua
   synaptic, 87.18.Sn
   telecommunications, 84.40.Ua
   theory of, 89.70.-a
     communication complexity, 89.70.Hj
Commutative rings and algebras, 02.10.Hh
Compactification (string theory), 11.25.Mj
Compaction
   granular systems, 45.70.Cc
   materials preparation, 81.20.Ev
```

```
Comparators, electronic, 84.30.Qi
Compensators (radiation therapy), 87.56.ng
Complex systems, 89.75.-k
   biological, 82.39.Rt
   chemical, 82.40.Qt
   granular models of, 45.70.Vn
Complex variables, 02.30.Fn
Composite materials
   dielectric, piezo-, and ferroelectric, 77.84.Lf
   electrical conductivity, 72.80.Tm
   fabrication, 81.05.Mh, 81.05.Ni, 81.05.Pj, 81.05.Qk
   nanocomposites, optical properties of, 78.67.Sc
   optical properties of thin films, 78.66.Sq
   rheology, 83.80.Ab
Composite particle models, 12.60.Rc
Composite superconductors, 74.81.Bd
Compressibility
   gases, 51.35.+a
   liquids, 62.10.+s
Compressible flows, 47.40.-x
Compressional waves
   in atmosphere, 92.60.hh
   meteorology, 92.60.hh
Compression molding, 83.50.Uv
Compressors, electronic, 84.30.Qi
Compton scattering
   atoms, 34.50.-s
   bulk matter, 78.70.-g
   by hadrons, 13.60.Fz
Computational techniques
   classical mechanics, 45.10.-b
   continuum mechanics, 46.15.-x
   electronic structure
     atoms and molecules, 31.15.-p
     solids, 71.15.Dx
   fluid dynamics, 47.11.-j
   mathematics, 02.70.-c
   statistical physics and nonlinear dynamics, 05.10.-a
Computed tomography
   in materials testing, 81.70.Tx
   in medical imaging, 87.57.Q-
Computer-aided design
```

```
electronics, 84.30.Bv
   microelectronics, 85.40.Bh
Computer-aided diagnosis, 87.57.R-
Computer algebra, 02.70.Wz
Computer hardware, 07.05.Bx
Computer interfaces, 07.05.Wr
   nuclear physics, 29.50.+v
Computer languages, 07.05.Bx
Computer modeling and simulation, 07.05.Tp
   astronomy, 95.75.Pq
   biomolecules, 87.15.A-
   cellular and subcellular biophysics, 87.15.A-, 87.16.A-
   chaotic systems, 05.45.Pq
   in chemical kinetics, 82.20.Wt
   disordered solids, 61.43.Bn
   impact phenomena, solids, 79.20.Ap
   in integrated circuits fabrication, 85.40.Bh
   liquid structure, 61.20.Ja
   of magnetic critical points, 75.40.Mg
   optical properties, 78.20.Bh
   plasma, 52.65.-y
   in radiation therapy, 87.55.Gh, 87.55.K-
   rheology, 83.10.Rs
   spectroscopy in medical physics, 87.64.Aa
Computers
   in acoustics, *43.55.Ka, *43.58.Ta
   as educational aids, 01.50.H-
   in experimental physics, 07.05.-t
   laboratory use, 01.50.Lc
   optical, 42.79.Ta
Computer science and technology, 89.20.Ff
Computer vision, 42.30.Tz
Concentrators, solar, 42.79.Ek
Condensates
   Bose-Einstein, 67.85.Hj, 67.85.Jk
   dynamic properties of, 67.85.De
   spinor condensates, 67.85.Fg
   static properties of, 67.85.Bc
Condensation, 64.70.fm
   of liquids, 68.03.Fg
   liquid-vapor transitions, 64.70.F-
Conducting polymers
```

```
electrical conductivity of, 72.80.Le
   reactions of, 82.35.Cd
   thin films, electrical properties of, 73.61.Ph
Conductors, electrical, 84.32.Ff
Conferences
   in acoustics, *43.10,Ce
   on physics topics, 01.10.Fv
Conference proceedings, 01.30.Cc
Configuration interaction calculations, 31.15.V-
Confocal microscopy in biophysics, 87.64.mk
Conformal field theory, 11.25.Hf
Conformal radiation treatment, 87.53.Kn
Conformation, molecular, 33.15.Bh
   barrier heights, 33.15.Hp
   biomolecules, 87.15.hp
   macromolecules and polymers, 36.20.Ey
Conservation laws
   fields and particles, 11.30.-j
   fluid dynamics, 47.10.ab
Constants, fundamental, 06.20.Jr
Constitutive relations
   fluid dynamics, 47.10.ab
   rheology, 83.10.Gr
Contact resistance and potential, 73.40.Cg
Contacts
   III-V semiconductor-to-semiconductor, 73.40.Kp
   II-VI semiconductor-to-semiconductor, 73.40.Lq
   integrated electronics, 85.40.Ls
   mechanical, 46.55.+d
   metal-nonmetal, 73.40.Ns
   metal-to-metal, 73.40.Jn
   nanocontacts, 81.07.Lk
   semiconductor-electrolyte, 73.40.Mr
Continental crust
   chemical composition, *91.67.gd
   seismology of, 91.30.Vc
Continental tectonics, *91.45.C-, 91.45.Cg
   neotectonics, *91.45.ch
   orogenic belts, *91.45.cc
   rift basins, *91.45.cj
Continents, 93.30.-w
   drift of, *91.45.D-, 91.45.Dh
```

```
Continuum mechanics
   of solids
     applications of, 46.70.-p
     computational methods in, 46.15.-x
     general theory of, 46.05.+b
     measurement methods in, 46.80.+j
     in rheology, 83.10.Ff
Control devices, 07.07.Tw
Control theory
   in mathematical physics, 02.30.Yy
   in neuroscience, 87.19.lr
Convection, 44.25.+f
   astrophysics, 95.30.Tg
   atmospheric, 92.60.hk
   fluid dynamics, 47.55.P-
   forced, 44.27.+g
   ionosphere, 94.20.wc
   magnetosphere, 94.30.cs
Convection currents (plate tectonics), 91.45.Fj
Convex sets, 02.40.Ft
Cooling
   of atoms, ions, and molecules, 37.10.De, 37.10.Mn, 37.10.Rs
   cryogenic, 07.20.Mc
   magnetic, 75.30.Sg
Cooling flows (galaxy clusters), 98.65.Hb
Copolymers
   rheology, 83.80.Uv
   structure and phase transitions, 82.35.Jk
Corals (paleoceanography), *92.30.Hj
Core-annular flows, 47.55.lv
Coriolis effects
   molecules (vibration/rotation), 33.20.Vq
   oceans, 92.10.Ei
Corona
   solar, 96.60.P-
     coronal holes, 96.60.pc
     coronal loops, 96.60.pf
     coronal mass ejection, 96.60.ph
   stellar, 97.10.Ex
Corona discharges, 52.80.Hc
Corrected article, 99.10.Jk
Correlations
```

```
collective effects, 71.45.Gm
   in electron and positron scattering, 34.80.Pa
   in nuclear electromagnetic transitions, 23.20.En
Corrosion (electrochemistry), 82.45.Bb
Corrosion fatigue, 81.40.Np
Corrosion protection
   surface treatments, 81.65.Kn
   fuel cell technology, 88.30.Nn
Cosmic censorship, 04.20.Dw
Cosmic dust
   external galaxies, 98.58.Ca
   Milky Way, 98.38.Cp
Cosmic rays, 96.50.S-
   astronomical observations, 95.85.Ry
   energy spectra, 96.50.sb
   extensive air showers, 96.50.sd
   galactic and extragalactic, 98.70.Sa
   high-energy interactions, 13.85.Tp
   interplanetary propagation, 96.50.sh
   in ionosphere, 94.20.wq
   nucleosynthesis, 26.40.+r
Cosmic strings, 11.27.+d, 98.80.Cq
Cosmogony, 96.10.+i
Cosmological constant, 98.80.Es
Cosmology, 98.80.-k
Cosmotrons, 29.20.dk
Cost
   trends in renewable energy, 88.05.Lg
   of production of solar cells, 88.40.hm
Couette flow, 47.15.-x
Coulomb blockade, 73.23.Hk
Coulomb energies (nuclear levels), 21.10.Sf
Coulomb excitation (heavy-ion collisions), 25.70.De
Coulomb explosion, 79.77.+g
Coupled-channel methods (nuclear reactions), 24.10.Eq
Coupled cluster theory (atomic physics), 31.15.bw
Coupled map lattices, 05.45.Ra
CP invariance, 11.30.Er
CPT invariance, 11.30.Er
Cracks
   detection, 81.70.-q
   healing (rheology), 83.60.Uv
```

```
phase transitions, 64.60.av
   structural failure of materials, 62.20.mt
   structural mechanics, 46.50.+a
Cratering (Moon), 96.20.Ka
Creep
   crystal defects, 61.72.Hh
   effects of materials treatment, 81.40.Lm
   mechanical properties of solids, 62.20.Hg
Creeping flows, 47.15.G-
Cretaceous period, *91.70.db
Critical currents (superconductivity), 74.25.Sv
Critical exponents, 64.60.F-
   Magnetic critical point effects, 75.40.Cx
Critical fields (superconductivity), 74.25.Op
Criticality, self-organized, 05.65.+b
Critical phenomena
   in magnetism, 75.40.-s
   in physical chemistry, 82.60.-s
   quantum critical phenomena (superconductivity), 74.40.Kb
   at surfaces and interfaces, 68.35.Rh
   in thermodynamics, 05.70.Jk
Critical points
   dynamic critical behavior, 64.60.Ht
      criticality of glass transitions, 64.70.qj
   equilibrium properties near, 64.60.F-
   general theory of critical region behavior, 64.60.fd
   in magnetic properties, 75.40.-s
   multicritical points, 64.60.Kw
Cryobiology (glaciology), 92.40.Vq, *92.40.vu
Cryogenics
   instrumentation, 07.20.Mc
Cryosphere, 92.40.-t
   global change, 92.70.Ha
Cryptography, quantum, 03.67.Dd
Crystal binding, 61.50.Lt
Crystal defects, 61.72.-y
   effects on transition temperature (superconductivity), 74.62.Dh
Crystal fields
   level splitting, 71.70.Ch
   in magnetic ordering, 75.10.Dg
Crystal growth
   in controlled atmospheres, 81.10.St
```

```
from melts, 81.10.Fq
   physics and chemistry of, 81.10.-h
   from solid phases, 81.10.Jt
   from solutions, 81.10.Dn
   in space, 81.10.Mx
   in vacuum, 81.10.Pq
   from vapors, 81.10.Bk
   theory and models of, 81.10.Aj
Crystallization
   liquid-solid transitions, 64.70.dg
   in solutions of macromolecules (biomolecules), 87.15.nt
Crystallographic databases, 61.68.+n
Crystallography. see crystal structure
Crystals
   impurities, 61.72.S-
   liquid, structure of, 61.30.-v
   microstructure, 61.72.-y
      materials treatment effects on, 81.40.-z
   morphology and orientation, 81.10.Aj
   nonlinear optical, 42.70.Mp
   phase diagrams, 81.30.-t
   purification, 81.10.-h
   quantum, 67.80.-s
Crystal structure
   alloys, 61.66.Dk
   atomic and molecular scattering methods, 61.05.Np
   bulk crystals, 61.50.-f
   of clean solid surfaces, 68.35.B-
   effects on transition temperature (superconductivity), 74.62.Bf
   electron diffraction and scattering methods, 61.05.J-
   elemental solids, 61.66.Bi
   inorganic compounds, 61.66.Fn
   minerals, 91.60.Ed
   neutron diffraction and scattering methods, 61.05.F-
   organic compounds, 61.66.Hq
   theory, 61.50.Ah
   x-ray diffraction and scattering methods, 61.05.C-
Crystal symmetry, 61.50.Ah
Cuprates (superconductors), 74.72.-h
Curie point
   Ferroelectric phase transitions, 77.80.B-
   magnetic, 75.30.Kz, 75.40.-s
```

```
Current drive (magnetic confinement), 52.55.Wq
Currents
   critical (superconductivity), 74.25.Sv
   in ionosphere, 94.20.Ss
   in magnetosphere, 94.30.Kq
   marine geology, 91.50.Jc
   theory of fields and particles, 11.40.-q
Curricula and evaluation (physics education), 01.40.G-
Curvature measurement, 06.30.Bp
Cusps, 52.55.Lf
Cyclotron resonance
   condensed matter, 76.40.+b
   ion-cyclotron resonance (plasma), 52.50.Qt
Cyclotrons, 29.20.dg
Cytoskeleton, 87.16.Ln
Dams, 92.40.Xx
Dark energy, 95.36.+x
Dark field optical microscopy (biophysics), 87.64.mf
Dark matter, 95.35.+d
Data acquisition, 07.05.Hd
   nuclear physics, 29.85.Ca
Databases
   astronomy, 95.80.+p
   crystallography, 61.68.+n
Data management, 07.05.Kf
Data visualization, algorithms for, 07.05.Rm
D branes, 11.25.Uv
Debye temperature, 63.70.+h
Debye-Waller factor, 61.05.C-, 63.70.+h
Decay
   baryons, 13.30.-a
   electromagnetic (particle physics), 13.40.Hq
   heavy neutrinos, 13.35.Hb
   intermediate bosons, 13.38.-b
   isomer, 23.35.+g
   mesons
     hadronic, 13.25.-k
     leptonic and semileptonic, 13.20.-v
   muons, 13.35.Bv
   by proton emission, 23.50.+z
   radiationless (molecules), 33.50.Hv
   radioactive (see 23)
```

```
taus, 13.35.Dx
Decision theory, 02.50.Le
Decoherence
   Bose-Einstein condensates, 03.75.Gg
   quantum error correction, 03.67.Pp
   quantum mechanics, 03.65.Yz
Decomposition reactions, 82.30.Lp
Deep energy levels, 71.55.-i
Deep-level photothermal spectroscopy, 79.10.na
Defect levels
   bulk matter, 71.55.-i
   surfaces and interfaces, 73.20.Hb
Defects, crystal, 61.72.-y
   absorption spectra, 78.40.-q
   determination by diffraction and scattering, 61.72.Dd
   diffusion, 66.30.Lw
   EPR, 76.30.Mi
   formation and annealing, 61.72.Cc
   gettering effect, 61.72.Yx
   liquid crystals, 61.30.Jf, 61.30.Mp
   quantum tunneling, 66.35.+a
   scattering by (electronic transport), 72.10.Fk
   solid surfaces and interfaces, 68.35.Dv
   superconductors, 74.62.Dh
   thin films, 68.55.Ln
Deflectors (optical devices), 42.79.Fm
Deformation
   crust and mantle
     geodesy, 91.10.Kg
     structural geology, 91.55.Ln
   effects of materials treatment on, 81.40.Lm
   high strain zones (structural geology), 91.55.Mb
   kinematics (rheology), 83.10.Bb
   material flow, 83.50.-v
   mathematical aspects, 46.25.Cc
   mechanical properties of solids, 62.20.F-
Degasification (vacuum apparatus), 07.30.Bx
Degenerative diseases, 87.19.xr
de Haas-van Alphen effect, 71.18.+y
Delay equations, in function theory, 02.30.Ks
Delocalization (surface electron states), 73.20.Jc
Demodulators, 84.30.Qi
```

```
optical, 42.79.Hp
Demographics, 89.65.Cd
Demonstration experiments (physics education), 01.50.My
Demultiplexers, 42.79.Sz
Dendrites, 68.70.+w
Dense plasma focus, 52.59.Hq
Density
   changes of, 65.40.De
   measurement of, 06.30.Dr
Density-functional theory
   atomic and molecular physics, 31.15.E-
   condensed matter, 71.15.Mb
Depolarization (dielectric properties), 77.22.Ej
Deposition
   films and coatings, 81.15.-z
   integrated circuits, 85.40.Sz
Depth profiling, 61.72.S-, 81.70.Jb
Desertification, 92.40.lv
Design of experiments (computers), 07.05.Fb
Desorption
   electron-stimulated, 68.43.Rs, 79.20.La
   field induced, 79.70.+q
   kinetics of, 68.43.Nr
   photon-stimulated, 68.43.Tj, 79.20.La
   thermal, 68.43.Vx
Detectors
   bolometers, 07.57.Kp, 95.55.Rg
   Cherenkov, 29.40.Ka
   infrared, 07.57.Kp, 85.25.Pb, 85.60.Gz
   microwave, 07.57.Kp
   optical, 42.79.Pw
   radiation, 29.40.-n
   radiowave, 07.57.Kp
   submillimeter wave, 07.57.Kp, 85.25.Pb
   x-ray, 07.85.Fv
Detonation
   chemical reactions, 82.33.Vx
   fluid dynamics, 47.40.Rs
   seismology, 91.30.Rz
Deuteron-induced reactions, 25.45.-z
Deuterons, 27.10.+h
Developmental diseases, 87.19.xt
```

```
Devonian period, *91.70.ff
Diamagnetic resonance, 76.40.+b
Diamagnetism, 75.20.-g
    local moments in compounds, 75.20.Hr
    in gases, 51.60.+a
    in metals and alloys, 75.20.En
    in nonmetals, 75.20.Ck
Diamond, 81.05.ug
Diamond anvil cells, 07.35.+k
Diaphragms, optical, 42.79.Ag
Diatomic molecules, electron correlation in, 31.15.vn
Dichroism
    materials, 78.20.Fm
    molecules, 33.55.+b
Dictionaries, 01.30.Kj
Dielectric breakdown
    gases, 51.50.+v
    insulators, 77.22.Jp
Dielectric constant, 78.20.Ci
Dielectric devices, 85.50.-n
Dielectric function, 77.22.Ch
    collective excitations, 71.45.Gm
Dielectric films, 77.55.-g
    epitaxial and superlattice films, 77.55.Px
    high-permittivity gate dielectric films, 77.55.D-
     for silicon electronics, 77.55.df
     for nonsilicon electronics, 77.55.dj
    high permittivity capacitive films, 77.55.F-
      BaTiO<sub>3</sub>-based films, 77.55.fe
     ferroelectric films, excluding BaTiO<sub>3</sub>, Pb(Zr,Ti)O<sub>3</sub>, 77.55.fp
      niobate- and tantalite-based films, 77.55.fj
      paraelectric films, 77.55.fb
      Pb(Zr,Ti)O<sub>3</sub>-based films, 77.55.fg
    low-permittivity films, 77.55.Bh
    multiferroic/magnetoelectric films, 77.55.Nv
    piezoelectric and electrostrictive films, 77.55.H-
     AIN films, 77.55.hd
     PZT films, 77.55.hj
      ZnO films, 77.55.hf
    pyroelectric films, 77.55.Kt
Dielectric loss, 77.22.Gm
Dielectric materials, 77.84.-s
```

```
borides, 77.84.Bw
   carbides, 77.84.Bw
   chalcogenides, 77.84.Bw
   composite materials, 77.84.Lf
   emulsions, 77.84.Nh
   KDP- type crystals, 77.84.Fa
   liquid crystals, 77.84.Nh
   liquids, 77.84.Nh
   niobates, 77.84.Ek
   nitrides, 77.84.Bw
   organic compounds, 77.84.Jd
   oxides, 77.84.Bw
   polymers, 77.84.Jd
   PZT, 77.84.Cg
   suspensions, 77.84.Nh
   tantalates, 77.84.Ek
   TGS-type crystals, 77.84.Fa
   titanates, 77.84.Cg
   in electrochemistry, 82.45.Un
   thin films, 77.55.-g
Dielectric properties
   of gases, 51.70.+f
   new topics in, 77.90.+k
   of plasma, 52.25.Mg
   related to treatment conditions, 81.40.Tv
   of solids and liquids, 77.22.-d
     depolarization, 77.22.Ej
     dielectric breakdown, 77.22.Jp
     dielectric function, 77.22.Ch
     dielectric loss and relaxation, 77.22.Gm
      permittivity, 77.22.Ch
     polarization, 77.22.Ej
      space charge effects, 77.22.Jp
   of tissues and organs, 87.19.rf
Dielectric relaxation, 77.22.Gm
Differential equations
   in mathematical aspects of biological physics, 87.10.Ed
   numerical approximation and analysis, 02.60.Lj
   ordinary, 02.30.Hq
   partial, 02.30.Jr
Differential geometry, 02.40.-k
Differential overlap method (atomic and molecular physics), 31.15.bu
```

```
Differential thermal analysis (DTA), 81.70.Pg
Diffraction
   acoustical, *43.20.Fn, *43.25.Jh
      ultrasound, *43.35.Bf, *43.35.Cg
   electron, 61.05.J-
   neutron, 61.05.fm
   optical, 42.25.Fx
   x-ray, 61.05.cp
Diffraction gratings
   holographic, 42.40.Eq
   optical, 42.79.Dj
Diffractometers
   electron, 07.78.+s
   x-ray, 07.85.Jy
Diffusion
   of adsorbates, 68.43.Jk
   in atmosphere, 92.60.hk
   of biomolecules, 87.15.Vv
   in chemical reaction kinetics, 82.40.Ck
   clusters, 36.40.Sx
   in gases, 51.20.+d
   of gases in solids, 66.30.je
   of impurities, 66.30.J-
   in liquids, 66.10.C-
   in nanoscale solids, 66.30.Pa
   neutron, 28.20.Gd
   nuclear magnetic resonance, 82.56.Lz
   in ocean, 92.10.Lq
   of protons in solids, 66.30.jp
   in quantum solids, 66.30.Ma
   in solids, 66.30.-h
   at solid surfaces and interfaces, 68.35.Fx
   spin, 75.40.Gb
   turbulent, 47.27.tb
   of water in solids, 66.30.jj
Diffusion-limited aggregation, 61.43.Hv
Digital circuits, 84.30.Sk
Digital imaging
   astronomy, 95.75.Tv
   image processing algorithms, 07.05.Pj
Digital radiography, 87.59.bf
Diode lasers, 42.55.Px
```

```
Diode-pumped lasers, 42.55.Xi
Diodes
   high-voltage, 52.59.Mv
   junction, 85.30.Kk
   light-emitting, 85.60.Jb
   plasma, 52.75.Fk
Dirac equation, 03.65.Pm
   nonrelativistic limits in, 31.30.jx
Disasters, natural and man-made, 89.60.Gg
Discharges, electric, 52.80.-s
Disclinations
   crystals, 61.72.Lk
   liquid crystals, 61.30.Jf
Discriminators, electronic, 84.30.Qi
Diseases, 87.19.X-
   ALS, 87.19.xr
   Alzheimer's, 87.19.xr
   bacterial diseases, 87.19.xb
   cancer, 87.19.xj
   degenerative diseases, 87.19.xr
   developmental diseases, 87.19.xt
   endocrine diseases, 87.19.xv
   epilepsy, 87.19.xm
   fungal diseases, 87.19.xg
   gastrointestinal, 87.19.xu
   genetic diseases, 87.19.xk
   immune system diseases, 87.19.xw
   motor system diseases, 87.19.xe
   musculoskeletal diseases, 87.19.xn
   parasitic diseases, 87.19.xe
   Parkinson's, 87.19.xe
   prion diseases, 87.19.xh
   stroke, 87.19.xq
   viral diseases, 87.19.xd
Disk galaxies, 98.52.Nr
Dislocations, 61.72.Ff, 61.72.Hh, 61.72.Lk
Disorder effects on transition temperature (superconductivity), 74.62.En
Disordered solids
   absorption and reflection spectra, 78.40.Pg
   amorphous solids
     vibrational states in, 63.50.Lm
   disordered crystalline alloys
```

```
vibrational states in, 63.50.Gh
   electrical conductivity, 72.80.Ng
   glasses
     vibrational states in, 63.50.Lm
   infrared and Raman spectra, 78.30.Ly
   localization in, 71.55.Jv
   photoemission, 79.60.Ht
   photoluminescence, 78.55.Qr
   structure, 61.43.-j
   superconductivity, 74.81.Bd
   vibrational states in, 63.50.-x
Dispersion hardening, 81.40.Cd
Dispersion-reinforced composites, 81.05.Ni
Dispersions
   physical chemistry, 82.70.-y
   quantum optical phenomena, 42.50.Nn
   rheology of, 83.80.Hj
Displacement measurement, 06.30.Bp
Displacive phase transitions, 63.70.+h
Display devices
   electrochemical, 82.47.Tp
   in general instrumentation, 07.07.Hj
   optical, 42.79.Kr
   optoelectronic, 85.60.Pg
Dissociation
   in chemical reactions, 82.30.Lp
     of biomolecules, 87.15.rs
     photochemical, 82.50.-m
   molecular
     diffuse spectra, 33.80.Gj
     by electron impact, 34.80.Ht
     energy of, 33.15.Fm
   single molecule, 82.37.Np
Dissolution
   in solutions of macromolecules (biomolecules), 87.15.np
Distance measurement, 06.30.Bp
Distorted-wave approximation (nuclear reactions), 24.10.Eq
Distributed-feedback lasers, 42.55.-f
Distribution theory, 02.50.Ng
Diurnal cycles (oceanography), 92.05.Fg
Divertors, 28.52.Lf, 52.55.Rk
DNA, 87.14.gk
```

```
chemical kinetics of, 82.39.Pj, 87.15.R-
Domain structures
   in ferroelectricity and antiferroelectricity, 77.80.Dj
   in magnetic films, 75.70.Kw
   in magnetic nanoparticles, 75.75.Fk
   in magnetization curves and hysteresis, 75.60.Ch
   magnetization dynamics of, 75.78.Fg
Domain walls
   cosmology, 98.80.Cq
   field theory, 11.27.+d
    magnetic properties and materials, 75.60.Ch
Doped-insulator lasers, 42.55.Rz
Doping
   effects on transition temperature (superconductivity), 74.62.Dh
   germanium and silicon, 61.72.uf
   III-V and II-VI semiconductors, 61.72.uj
   integrated-circuit technology, 85.40.Ry
   profiles, 61.72.U-, 81.70.Jb
   thin films, 68.55.Ln
Doppler effect (atmospheric acoustics), *43.28.Py
Doppler imaging in ultrasonography, 87.63.dk
Dosimetry/exposure assessment
   of acoustic and ultrasonic radiation, 87.50.yk
   of electric and magnetic fields, 87.50.cm
   electron and positron, 87.53.Bn
   of ionizing radiations, 87.53.Bn
   of millimeter and terahertz radiation, 87.50.up
   neutron and proton, 87.53.Bn
   in nuclear medicine imaging, 87.57.uq
   of optical and infrared radiation, 87.50.wj
   x-rays and gamma rays, 87.53.Bn
   of radiofrequency and microwave radiation, 87.50.sj
Double nuclear magnetic resonance (DNMR)
   condensed matter, 76.70.Fz
   molecules, 33.40.+f
Drag reduction
   in flow control, 47.85.lb
   material behavior (rheology), 83.60.Yz
D region, ionosphere, 94.20.de
Drell-Yan process, 13.85.Qk
Drift waves (plasma), 52.35.Kt
Drops, 47.55.D-
```

```
Drought, 92.40.De
Drug delivery (biopropulsion), 47.63.mh
Duality, strong interactions, 12.40.Nn
Ductility, 62.20.fk
Ducts
   flows in, 47.60.Dx
   sound propagation in, *43.28.Py, *43.55.Rg
Dusty plasmas, 52.27.Lw
Dwarf galaxies, 98.52.Wz, 98.56.Wm
   elliptical, 98.52.Wz
Dwarf novae, 97.30.Qt
Dwarf planets, 96.30.lz
   dwarf planet satellites, 96.30.Ja
Dwarf stars, 97.20.-w
Dye lasers, 42.55.Mv
Dynamical systems
   linear, 45.30.+s
   nonlinear, 05.45.-a
Dynamic loading, 83.50.-v
Dynamic mechanical analysis (rheology), 83.85.Vb
Dynamic phases, 03.65.Vf
Dynamics
   of biomolecules, 87.15.H-
   conformational changes, 87.15.hp
   of domain structures (magnetization), 75.78.Fg
   folding dynamics, 87.15.hm
   intermolecular interactions, 87.15.hg
   transport dynamics, 87.15.hj
   ultrafast dynamics, 87.15.ht
   of magnetic domain structures, 75.78.Fg
   of magnetic nanoparticles, 75.75.Jn
Dynamometers, 07.10.Pz
Ear, *43.64.-q, 43.64.+r
Early Universe, 98.80.Cq
Earth
   core (tectonophysics), 91.45.Kn
   crust movement, 91.10.Kg, 91.45.Ga
   interior structure and properties, 91.35.-x
   magnetic field, 91.25.-r
Earthquakes, *91.30.P-, 91.30.Px
   forecasting, *91.30.pd
   magnitudes, *91.30.pc
```

```
phase transitions, 64.60.av
Echelles, 42.79.Dj
Eclipses, 95.10.Gi
Ecology, 87.23.-n
   biogeosciences, *91.62.Mn
   ecohydrology, plant ecology, 92.40.Oj
   ocean biology, *92.20.jm, *92.20.jp
   pattern formation in, 87.23.Cc
   population dynamics, 87.23.Cc
Economics
   business and management, 89.65.Gh
   economic issues, sustainability, cost trends (renewable energy), 88.05.Lg
Econophysics, 89.65.Gh
ECR plasma heating, 52.50.Sw
Eddies (turbulent flows)
   eddy-viscosity closures, 47.27.em
   large-eddy simulation, 47.27.ep
Eddy-current testing, 81.70.Ex
Editorial note, 99.10.Np
Editorials, 01.30.Ww
Education, 01.40.-d
Educational aids, 01.50.-i
EEG, in neuroscience, 87.19.le
Effective mass, 71.18.+y
Eikonal approximation, 11.80.Fv
Einstein equation, general relativity, 04.20.-q
Einstein-Maxwell spacetime, 04.40.Nr
Elastic deformation
   material flow, 83.50.-v
   material treatment effects, 81.40.Jj
   mechanical properties of solids, 62.20.F-
Elasticity
   in continuum mechanics of solids, 46.25.-y, 46.35.+z
   mechanical properties of solids, 62.20.D-
   rocks and minerals, 91.60.Ba
   static, 46.25.-y
   superconductors, 74.25.Ld
   theory in biological physics, 87.10.Pq
Elastic moduli, 62.20.de
Elastic scattering
   of atoms and molecules, 34.50.Cx
   deuteron-induced reactions, 25.45.De
```

```
of electrons by atoms and molecules, 34.80.Bm
   hadron-induced, 13.85.Dz
   heavy-ion reactions, 25.70.Bc
   lepton-induced reactions, 25.30.Bf
   meson-induced reactions, 25.80.Dj
   nucleon-induced reactions, 25.40.Cm, 25.40.Dn
   of photons and leptons by hadrons, 13.60.Fz
   reactions induced by unstable nuclei, 25.60.Bx
   triton-,<sup>3</sup>He-, and <sup>4</sup>He-induced reactions, 25.55.Ci
Elastic structures, acoustic scattering by, *43.40.Fz
Elastic waves
   linear acoustics, *43.20.Gp, *43.20.Jr
   rheology, 83.60.Uv
   solids, 62.30.+d
Elastomeric polymers, 83.80.Va
Elastomers
   rheology, 83.80.Va, 83.80.Wx
   structure, 61.41.+e
Elasto-optical effects, 78.20.H-, 78.20.hb
Electrets, 77.22.-d
Electrical conductivity
   Earth, 91.25.Qi
   materials treatment effects on, 81.40.Rs
   metals and alloys
     amorphous and liquid, 72.15.Cz
     crystalline, 72.15.Eb
   semiconductors and insulators, 72.20.-i
     mixed conductivity, 72.60.+g
     specific materials, 72.80.-r
   superconductors, 74.25.fc
   surfaces, 73.25.+i
   thin films, 73.50.-h
      specific materials, 73.61.-r
EELS (electron energy loss spectroscopy), 79.20.Uv
Electrical impedance tomography, 87.63.Pn
Electrical instruments, 07.50.-e
Electrical noise, 07.50.Hp
Electrical phenomena in gases, 51.50.+v
Electrical sensors, 07.07.Df
Electrical shielding, 07.50.Hp
Electric breakdown, 51.50.+v, 52.80.-s, 77.22.Jp
Electric charge, 41.20.Cv, 84.37.+q
```

```
Electric current measurement, 84.37.+q
Electric discharges, 52.80.-s
Electric fields
   effects on biological systems, 87.50.C-
   effects on liquid crystal structure, 61.30.Gd
   effects on material flows, 83.60.Np
   electromagnetism, 41.20.-q
   galactic, 98.62.En
   instrumentation for measurement, 07.50.-e
   in ionosphere, 94.20.Ss
   in magnetosphere, 94.30.Kq
   measurement, 84.37.+q
   Milky Way, 98.35.Eg
   solar, 96.60.Hv
   stellar, 97.10.Ld
   therapeutic applications, 87.50.ct
Electric impedance measurement, 84.37.+q
Electric moments
   atomic, 32.10.Dk
   hadronic, 13.40.Em
   molecular, 33.15.Kr
   nuclear, 21.10.Ky
Electric motors, 84.50.+d
Electric power transmission, 88.80.H-
   ac power transmission, 88.80.hm
   grid-connected energy resources, 88.80.Cd
   high-current, and high voltage (electrical engineering), 84.70.+p
   high-voltage dc transmission, 88.80.hj
   rf power transmission, 88.80.hp
   superconducting cables
     in renewable energy technology, 88.80.hr
     in electrical engineering, 84.71.Fk
   superconducting wires and tapes (electrical engineering), 84.71.Mn
   transmission grids, 88.80.hh
   wireless transmission, 88.80.ht
Electroacoustic transducers, *43.38.Bs, 43.38.Dv, 43.38.Fx
Electroanalytical chemistry, 82.45.Rr
Electrocaloric effects, 77.70.+a
Electrochemical analysis, 82.80.Fk
Electrochemical capacitors, 82.47.Uv
Electrochemical displays, 82.47.Tp
Electrochemical energy conversion, 82.47.-a
```

Electrochemical engineering, 82.47.Wx

Electrochemical sensors, 82.47.Rs

Electrochemical synthesis, 82.45.Aa

Electrochemical techniques in biophysics, 87.80.Kc

Electrochemistry, 82.45.-h

applied, 82.47.-a

bioelectrochemistry, 82.45.Tv, 87.15.Tt

Electrochromic devices, 85.60.Pg

Electrochromism, 78.20.Jq

Electrodeposition

electrochemistry of, 82.45.Qr

methods of film deposition, 81.15.Pq

Electrodes (electrochemistry), 82.45.Fk

Electrodissolution, 82.45.Qr

Electrodynamics

classical, 03.50.De

quantum, 12.20.-m

Electroelasticity, 46.25.Hf

Electrogasdynamic energy conversion, 84.60.Rb

Electrohydrodynamics, 47.65.-d

Electrokinetic effects (complex fluids), 47.57.jd

Electroluminescence, 78.60.Fi

Electrolysis, 82.45.Hk

Electrolytes

electrochemistry, 82.45.Gj

structure of, 61.20.Qg

Electromagnetic decay, 13.40.Hq

Electromagnetic fields, 03.50.De, 41.20.-q

Electromagnetic induction (geoelectricity), 91.25.Qi

Electromagnetic interactions, 13.40.-f

electroweak, 12.15.-y

unified field theories, 12.10.-g

Electromagnetic mass differences, 13.40.Dk

Electromagnetic moments, nuclear, 21.10.Ky

Electromagnetic quantities, 06.30.Ka

Electromagnetic radiation

interaction with plasma, 52.40.Db

from moving charges, 41.60.-m

solar, \*96.60.T-, 96.60.Tf

wave propagation, 41.20.Jb

Electromagnetic testing, 81.70.Ex

Electromagnetic transitions

```
nuclear
     angular distribution, 23.20.En
     correlation measurement, 23.20.En
     internal conversion, 23.20.Nx
     internal pair production, 23.20.Ra
     level energies, 23.20.Lv
Electromagnetic waves
   atmospheric optics, 42.68.Ay
   atmospheric propagation, 92.60.Ta
   ionospheric propagation, 94.20.Bb, 94.20.ws
   magnetospheric propagation, 94.30.Tz
   microwaves, 84.40.-x
   in plasma, 52.35.Hr
   radiowaves, 41.20.Jb, 84.40.-x
   wave optics, 42.25.Bs
Electromagnetism. See 41
Electromechanical effects, 77.65.-j
   acousto-electric effects, 77.65.Dq
   electromechanical resonance, 77.65.Fs
   electrostrictive constants, 77.65.Bn
   strain-induced electromechanical effects, 77.65.Ly
Electrometers, 07.50.Ls
Electromigration, 66.30.Qa
Electron affinity
   atoms, 32.10.Hq
   molecules, 33.15.Ry
Electron-atom collisions
   elastic scattering, 34.80.Bm
   excitation and ionization, 34.80.Dp
Electron attachment, 34.80.Ht, 34.80.Lx
Electron beam annealing, 81.40.Ef
Electron beam-assisted deposition, 81.15.Jj
Electron beam induced current (EBIC), 68.37.Hk
Electron beam lithography, 85.40.Hp
Electron beam radiation effects, 61.80.Fe
Electron beams
   in medicine
     dosimetry of, 87.53.Bn
   nonrelativistic, 41.75.Fr
   in particle accelerators, 29.27.-a
   polarized (atomic and molecular scattering), 34.80.Nz
   in radiation therapy
```

```
safety of, 87.55.N-
   relativistic, 41.75.Ht
Electron capture (nuclear physics), 23.40.-s
Electron correlation calculations, 31.15.V-
Electron-cyclotron waves (plasma), 52.35.Hr, 52.35.Qz
Electron density of states
   crystalline solids, 71.20.-b
   disordered solids, 71.23.-k
   surfaces and interfaces, 73.20.-r
Electron diffraction
   in biophysics, 87.64.Bx
   in structure determination, 61.05.J-
Electron diffractometers, 07.78.+s
Electron doped materials (cuprate superconductors), 74.72.Ek
Electron dosimetry, 87.53.Bn
Electron double resonance (ELDOR)
   condensed matter, 76.70.Dx
   molecules, 33.40.+f
Electron emission
   Auger emission, 79.20.Fv
   exoelectron emission, 79.75.+g
   field emission, 79.70.+q
   new topics in, 79.90.+b
   photoemission, 79.60.-i
     from adsorbed layers, 79.60.Dp
     from disordered structures, 79.60.Ht
     from insulators, 79.60.Bm
     from interfaces, 79.60.Jv
     from liquids, 79.60.Cn
     from metals, 79.60.Bm
     from nanostructures, 79.60.Jv
     from polymers, 79.60.Fr
     from semiconductors, 79.60.Bm
   secondary emission, 79.20.Hx
   thermionic emission, 79.40.+z
Electron energy loss spectroscopy (EELS), 79.20.Uv
Electron gas
   quantum statistical mechanics, 05.30.Fk
   theories and models, 71.10.Ca
   two-dimensional, 73.20.-r
Electron-hadron scattering, 13.60.-r
Electron-hole drops and plasma, 71.35.Ee
```

```
Electron holography
   in structure determination, 61.05.jp
Electronic circuits, 07.50.Ek, 84.30.-r
   microelectronics, 85.40.-e
   microwave, 84.40.Dc
     integrated, 84.40.Lj
   passive components of, 84.32.-y
Electronic excitation and ionization
   atomic collisions, 34.50.Fa
   molecular collisions, 34.50.Gb
Electronic publications, 01.30.Xx
Electronic publishing, 01.20.+x
Electronic structure
   atomic and molecular clusters, 36.40.Cg
   atoms, and molecules
     calculations of, 31.15.-p
     ab initio calculations, 31.15.A-
       alternative approaches to, 31.15.X-
       approximate calculations for, 31.15.B-
       density-functional theory, 31.15.E-
       electron correlation calculations, 31.15.V-
       corrections to, 31.30.-i
     interaction effects on, 31.70.-f
     of magnetic nanoparticles, 75.75.Lf
      theory of, 31.10.+z
   biomolecules, 87.10.-e
   condensed matter
     calculation methods, 71.15.-m
     crystalline solids, 71.20.-b
     disordered solids, 71.23.-k
     graphene, 73.22.Pr
     liquid metals and semiconductors, 71.22.+i
     nanoscale materials, 73.22.-f
     calculations in superconductivity, 74.20.Pq
     theories and models of, 71.10.-w
   macromolecules and polymer molecules, 36.20.Kd
   properties of superconductors, 74.25.Jb
   surfaces, interfaces, and thin films (see 73)
Electronic transport
   bulk matter (see transport processes)
   graphene, 72.80.Vp
   interface structures, 73.40.-c
```

```
nanoscale materials, 73.63.-b
   thin films, 73.50.-h, 73.61.-r
Electron-induced nuclear reactions, 25.30.-c
Electron-ion scattering
   excitation and ionization, 34.80.-i
   recombination and electron attachment, 34.80.Lx
Electron microscopes, 07.78.+s
Electron microscopy
   in biophysics, 87.64.Ee
   in observations of crystal defects, 61.72.Ff
   in structure determination, 68.37.-d
Electron-molecule collisions
   dissociation, 34.80.Ht
   elastic scattering, 34.80.Bm
   excitation and ionization, 34.80.Gs
Electron optics, 41.85.-p
Electron paramagnetic resonance (EPR)
   in biophysics, 87.64.kh, 87.80.Lg
   in condensed matter, 76.30.-v
   in defect structure determination, 61.72.Hh
   of molecules, 33.35.+r
Electron phase diagrams, 71.10.Hf
Electron-phonon interactions
   electronic structure of solids, 71.38.-k
   electronic transport, 72.10.Di
   lattice dynamics, 63.20.kd
Electron-positron collisions, hadron production by, 13.66.Bc
Electron-positron plasmas, 52.27.Ep
Electron probe analysis, 81.70.Jb
Electrons, properties of, 14.60.Cd
Electron scattering
   in atomic and molecular collisions
     elastic scattering, 34.80.Bm
     inelastic scattering, 34.80.Dp, 34.80.Gs, 34.80.Ht
   in nuclear reactions
     elastic, 25.30.Bf
     inelastic, 25.30.Dh, 25.30.Fj
   spin arrangement determination by, 75.25.-j
   from surfaces, 68.49.Jk
Electron solids, 73.20.Qt
Electron sources, 07.77.Ka
   in nuclear physics, 29.25.Bx
```

```
Electron spectrometers, 07.81.+a
Electron spectroscopy
   in biophysics, 87.64.ks
   chemical analysis, 82.80.Pv
   nuclear and particle physics, 29.30.Dn
Electron spin resonance (ESR)
   in biophysics, 87.64.kh, 87.80.Lg
   in condensed matter, 76.30.-v
   in defect structure determination, 61.72.Hh
   of molecules, 33.35.+r
Electron stimulated desorption, 68.43.Rs, 79.20.La
Electron tubes, 84.47.+w
Electro-optical effects
   condensed matter, 78.20.Jq
   molecules, 33.57.+c
Electro-osmosis, in biological systems, 82.39.Wj
Electrophoresis
   biomolecule, 82.45.Tv, 87.15.Tt
   electrochemistry, 82.45.-h
Electrophotography, 07.68.+m
Electrophysiology
   auditory system, *43.64.Nf, 87.19.lt
   in biomedical engineering
      neural prosthetics, 87.85.E-
         charge injection in, 87.85.ej
         electrode stimulation in, 87.85.eg
     smart prosthetics, 87.85.F-
         feedback in, 87.85.ff
         feedforward in, 87.85.fh
   dielectric properties of tissues, 87.19.rf
   electrical properties of tissues, 87.19.R-
   electric field effects on biological systems, 87.50.C-
   in neuroscience
     action potential propagation (axons), 87.19.lb
     EEG and MEG, 87.19.le
     electrodynamics in the nervous system, 87.19.ld
     sensory systems, 87.19.lt
     synapses, 87.19.lg
Electroplating, 81.15.Pq
Electroproduction (nuclear reactions), 25.30.Rw
Electrorheological fluids, 47.65.Gx, 83.80.Gv
Electrostatic accelerators, 29.20.Ba
```

```
Electrostatic lenses, 41.85.Ne
Electrostatics, 41.20.Cv
Electrostatic waves and oscillations
   plasma waves, 52.35.Fp
Electrostriction, 77.65.-j
Electrostrictive constants, 77.65.Bn
Electrostrictive films, 77.55.H-
Electroweak interactions, 12.15.-y
   extensions of gauge sector, 12.60.Cn
   extensions of Higgs sector, 12.60.Fr
   nuclear tests of electroweak models, 24.80.+y
   in unified field theories, 12.10.Dm
Elemental abundances
   in stars, 97.10.Tk
   in Universe, 98.80.Ft
Elementary particles. See 10
   in astrophysics, 95.30.Cq
Ellipsometers, 07.60.Fs
Elliptical galaxies, 98.52.Eh, 98.56.Ew
El Nino Southern Oscillation
   oceanography, 92.10.am
   paleoceanography, *92.30.La
Embrittlement, 81.40.Np
EMC effect (muon scattering), 25.30.Mr
Emission spectra
   atoms, 32.30.-r, 32.50.+d
   of biomolecules, 87.15.mq
   condensed matter, 78.55.-m, 78.60.-b
   molecules, 33.20.-t, 33.50.-j
Emissions trading, 88.05.Pq
Emissivity (optical constants), 78.20.Ci
Empirical methods (atomic physics), 31.15.bu
Emulsions, 82.70.Kj
   complex fluids, 47.57.Bc
   dielectric properties, 77.84.Nh
   nuclear, 29.40.Rg
   photographic, 07.68.+m
   rheological properties, 83.80.lz
Encoding and decoding in neuroscience, 87.19.ls
ENDOR
   condensed matter, 76.70.Dx
   molecules, 33.40.+f
```

```
Energy analysis (renewable energy resources)
   economic issues, 88.05.Lg
   emissions trading, 88.05.Pq
   energy conservation, 88.05.Gh
   energy efficiency, 88.05.Bc
   energy use
     in agriculture, 88.05.Qr
     in appliances, 88.05.Rt
     in heating and cooling of buildings, 88.05.Sv
     in lighting, 88.05.Tg
     in manufacturing, 88.05.Vx
     in transportation, 88.05.Xj
   environmental aspects, 88.05.Np
   life cycle analysis, 88.05.Hj
   policy issues, 88.05.Jk
   renewables energy targets, 88.05.Ec
   thermodynamic considerations, 88.05.De
Energy conservation
   in classical mechanics, 45.20.dh
   in renewable energy, 88.05.Gh
Energy conversion, 84.60.-h
   electrochemical, 82.47.-a
   electrogasdynamic conversion, 84.60.Rb
   magnetohydrodynamic conversion, 84.60.Lw
   photoelectric conversion, 84.60.Jt
   thermionic conversion, 84.60.Ny
   thermoelectric conversion, 84.60.Rb
Energy delivery
   electric power transmission, 88.80.H-
   grid-connected distributed energy sources, 88.80.Cd
   infrastructure, 88.80.Kg
Energy extraction from ocean
   energy from ocean currents, 88.60.nm
   energy from ocean waves, 88.60.nf
   in hydrospheric geophysics, 92.05.Jn
   oceanic geothermal energy, 88.10.cj
   marine thermal gradients, 88.60.nj
   ocean thermal energy, 88.60.nr
   tidal energy, 88.60.nh
Energy losses
   atom and molecule scattering, 34.50.Bw
   of particles in condensed matter, 61.85.+p
```

```
Energy storage
   energy storage systems (electrical engineering), 84.60.Ve
   storage technologies (renewable energy), 88.80.F-
     batteries
       in energy delivery and storage, 88.80.ff
       lead-acid batteries in advanced vehicles, 88.85.jk
       lead-acid batteries in applied electrochemistry, 82.47.Cb
       lithium-ion batteries applied electrochemistry, 82.47.Aa
       nickel-metal-hydride batteries in advanced vehicles, 88.85.jm
       nickel-metal-hydride batteries in applied electrochemistry, 82.47.Cb
     superconducting magnetic energy storage, 88.80.fj
     supercapacitors
       in applied electrochemistry, 82.47.Uv
       in electrical engineering, 84.60.Ve
       in energy delivery and storage, 88.80.fh
       in advanced vehicles, 88.85.jp
     vehicle energy storage, 88.85.J-
Energy transfer
   intramolecular, 33.15.Hp
   rotational and vibrational, 34.50.Ez
   state-to-state (chemical reactions), 82.20.Rp
Engineering, 89.20.Kk
   biomedical, 87.85.-d
   electrochemical, 82.47.Wx
   nuclear (see nuclear engineering)
Ensemble theory
   classical, 05.20.Gg
   quantum, 05.30.Ch
Entanglement and quantum nonlocality, 03.65.Ud
   in Bose-Einstein condensation, 03.75.Gg
   in nonlinear optics, 42.65.Lm
   in quantum information, 03.67.Bg, 03.67.Mn
Enthalpy
   condensed matter, 65.40.G-
   gases, 51.30.+i
   physical chemistry, 82.60.-s
   thermodynamics, 05.70.Ce
Entropy
   condensed matter, 65.40.gd
   in information theory, 89.70.Cf
   thermodynamics, 05.70.-a
Environmental effects
```

```
on instruments, 07.89.+b
   of natural and man-made disasters, 89.60.Gg
Environmental impacts
   air quality, 92.60.Sz
   ground water quality, *92.40.kc
   nuclear power
     radioactive wastes, waste disposal, 28.41.Kw
   renewable energy resources, 88.05.Np
   surface water quality, *92.40.qc
Environmental magnetism, 91.25.fd
Environmental pollution
   air pollution, 92.60.Sz
   instruments for, 07.88.+y
   land pollution, soil pollution, *91.62.Rt
   water pollution, *92.40.kc, *92.40.qc
Environmental regulations, 89.60.Fe
Environmental safety, 89.60.Ec
Enzymatic catalysis, 87.15.R-
Enzymes, 87.14.ej
Ephemerides, 95.10.Km
Epilepsy, 87.19.xm
Epitaxial dielectric films, 77.55.Px
Epitaxy
   molecular beam epitaxy, 81.15.Hi
   liquid phase epitaxy, 81.15.Lm
   solid phase epitaxy, 81.15.Np
   vapor phase epitaxy, 81.15.Kk
Epoxy resins, 83.80.-k
EPR paradox, 03.65.Ud
Equations of state
   gases, 51.30.+i
   general theory, 05.70.Ce, 64.10.+h
   of metals and alloys, 64.30.Ef
   of nonmetals, 64.30.Jk
   nuclear matter, 21.65.Mn
   rock formation, 91.60.Fe
Equatorial ionosphere, 94.20.dt
Equilibrium constants, 82.60.Hc
E region, ionosphere, 94.20.dg
Erosion (hydrology), 92.40.Gc
Errata, 99.10.Cd
Error theory, 06.20.Dk
```

```
Eruptions, volcanic, 91.40.Ft
ESCA, 82.80.Pv
Estuarine oceanography, 92.10.Sx
Etalons, 42.79.Bh
Etching, 81.65.Cf
Etch pits, 61.72.Ff
Ethanol (from biomass), 88.20.ff
   from biomass, 88.20.ff
   fuel for advanced vehicles, 88.85.mj
Euclidean field theory, 11.10.Cd
Euclidean geometries, 02.40.Dr
Europa, 96.30.ld
Europe, 93.30.Ge
Eutectic structure, 81.30.-t
Evaporation, 64.70.fm
   of black holes, 04.70.Dy
   field-induced, 79.70.+q
   of liquids, 68.03.Fg
   meteorology, *92.60.jc
   water in atmosphere, *92.60.J-, 92.60.Jq
Evapotranspiration (hydrology), 92.40.Je
Evolution, 87.23.-n
   in biology, 87.23.Kg
   comets, 96.25.Bd
   external galaxies, 98.62.Ai
   Milky Way, 98.35.Ac
   Moon, 96.20.Br
   planets, 96.12.Bc, 96.15.Bc
   stellar, 97.10.Cv
Evolutionary geobiology (biogeosciences), *91.62.Np
EXAFS
   in biophysics, 87.64.kd
   in structure determination, 61.05.cj
Exchange interactions
   energy-level splitting, 71.70.Gm
   magnetically ordered materials, 75.30.Et
Exchange reactions, chemical, 82.30.Hk
Excimer lasers, 42.55.Lt
Excited states
   atomic and molecular, 31.50.Df
   electron correlation in, 31.15.vj
   Rydberg states
```

```
atoms, 32.80.Rm
         magnetic trapping of, 32.10.Ee
     molecules, 33.80.Rv
   solids
     electronic structure calculations, 71.15.Qe
     model systems, 71.10.Li
Excitons, 71.35.-y
Exoelectron emission, 79.75.+g
Exosphere, 92.60.ha
Exotic atoms and molecules, 36.10.-k
Exotic baryons, 14.20.Pt
Exotic mesons, 14.40.Rt
Exploding wires, 52.80.Qj
Exploration
   of continental structures, 93.85.De
   geophysical methods of
     downhole methods, 93.85.Fg
     gravity methods, 93.85.Hj
     radioactivity methods, 93.85.Np
     seismic methods, 93.85.Rt
   of oceanic structures, 93.85.Ly
Explosions
   chemical reactions, 82.33.Vx
   compressible flows, 47.40.Rs
   electric discharges, 52.80.Qj
   nuclear, 28.70.+y
   seismology, 91.30.Rz
   underwater, *43.30.Lz
Extensional flows
   deformation, 83.50.Jf
   measurement of, 83.85.Rx
Extinction coefficients, optical, 78.20.Ci
Extranuclear effects, 23.20.Nx
Extrasolar planets, 97.82.-j
Extrudate swell, 83.60.Jk
Extrusion, 81.20.Hy
Eye, 42.66.-p
Fabry-Perot interferometer, 07.60.Ly
Factorization (quark models), 12.39.St
Faddeev equation, 11.80.Jy
Failure
   integrated circuits, 85.40.Qx
```

```
materials, 81.40.Np
   mechanical properties, 62.20.M-
Familons, 14.80.Va
Faraday cups, 41.85.Qg
Faraday effect, 33.57.+c, 78.20.Ls
Fatigue
   effects of materials treatment, 81.40.Np
   structural mechanics, 46.50.+a
   structural failure of materials, 62.20.me
Faults, plate tectonics, 91.55.Jk
Femtochemistry
   coherent spectroscopy of atoms and molecules, 82.53.Kp
   femtosecond probing
     of adsorbed molecules, 82.53.St
     of biological molecules, 82.53.Ps
     of molecules in liquids, 82.53.Uv
     of molecules in solids, 82.53.Xa
     of semiconductor nanostructures, 82.53.Mj
   pump probe studies
     bound states, 82.53.Hn
     photodissociation, 82.53.Eb
Femtosecond techniques, 06.60.Jn
   femtochemistry, 82.53.-k
   in nonlinear optics, 42.65.Re
   in spectroscopy of solid state dynamics, 78.47.J-
Fermi-Dirac statistics, 05.30.-d
Fermi gas, 71.10.Ca
   degenerate, 03.75.Ss
Fermi liquid
   nonconventional mechanisms of superconductivity, 74.20.Mn
   theory of, 71.10.Ay
Fermion degeneracy
   in quantum fluids, 67.10.Db
Fermions
   composite, 71.10.Pm
   systems (quantum statistical mechanics), 05.30.Fk
Fermi surfaces, 71.18.+y
Ferrimagnetic resonance, 76.50.+g
Ferrimagnetics, 75.50.Gg
Ferrite devices, 85.70.Ge
Ferrites, 75.50.Gg
Ferroelasticity, 62.20.D-
```

Ferroelectric devices, 85.50.-n ferroelectric memories, 85.50.Gk Ferroelectricity, 77.80.-e domain structure, 77.80.Dj phase transitions, 77.80.Bswitching phenomena, 77.80.Fm Ferroelectric materials, 77.84.-s relaxor ferroelectrics, 77.80.Jk Ferroelectric phase transitions, 77.80.Beffects of material composition, 77.80.bg interface effects, 77.80.bn scaling effects, 77.80.bj strain effects, 77.80.bn Ferrofluids (magnetohydrodynamics), 47.65.Cb Ferromagnetic materials iron and its alloys, 75.50.Bb metals other than iron, 75.50.Cc nonmetals, 75.50.Dd Ferromagnetic resonance, 76.50.+g Few-body systems atomic systems, calculations for, 31.15.ac classical mechanics, 45.50.Jf nuclear structure, 21.45.-v Fiber gyros, 42.81.Pa Fiber lasers, 42.55.Wd Fiber-optic instruments, 07.60.Vg Fiber optics, 42.81.-i Fiber-optic sensors, 42.81.Pa Fiber-reinforced composites, 81.05.Ni Fibers, synthetic and natural, 81.05.Lg Fibrils, 87.14.em Field desorption, 79.70.+q Field effect transistors, 85.30.Tv spin polarized, 85.75.Hh Field emission, 79.70.+q Field-emission displays, 85.45.Fd Field-emission microscopy, 68.37.Vj Field emitters and arrays, 85.45.Db Field ionization, 79.70.+q Field-ion microscopy, 68.37.Vj Field theory, 11.10.-z classical, 03.50.-z

```
gauge, 11.15.-q
    noncommutative, 11.10.Nx
    quantized fields, 03.70.+k
    unified, 04.50.-h, 12.10.-g
Figure of merit (energy conversion), 84.60.Bk
Filamentation, in plasma, 52.38.Hb
Filaments
    in subcellular structure and processes, 87.16.Ka
Film deposition
    chemical vapor deposition, 81.15.Gh
    electron beam-assisted deposition, 81.15.Jj
    electron beam deposition, 81.15.Dj
    electrodeposition, 81.15.Pq
    epitaxy
      molecular beam epitaxy, 81.15.Hi
      liquid phase epitaxy, 81.15.Lm
     solid phase epitaxy, 81.15.Np
      vapor phase epitaxy, 81.15.Kk
    hot filament evaporation deposition, 81.15.Dj
    ion beam-assisted deposition, 81.15.Jj
    laser ablation deposition, 81.15.Fg
    spray coating, 81.15.Rs
    sputtering deposition, 81.15.Cd
    theory and models of, 81.15.Aa
Films
    dielectric, 77.55.-g
    electrical properties of, 73.61.-r
    electronic transport in, 73.50.-h
    graphene, 68.65.Pq
    growth, deposition, 81.15.-z
    Langmuir-Blodgett films, 68.18.-g, 68.47.Pe
    liquid films, 68.15.+e
    magnetic properties of, 75.70.Ak
    microscopic studies of, 68.37.-d
    in normal phase <sup>3</sup>He, 67.30.ej
    in normal phase <sup>4</sup>He, 67.25.bh
    optical properties of, 78.20.-e, 78.66.-w
    physical properties of, 68.60.-p
    of solid <sup>3</sup>He, 67.80.dm
    of solutions of <sup>3</sup>He in liquid <sup>4</sup>He, 67.30.hr
    structure and morphology, 68.55.-a
    superconducting, 74.78.-w
```

```
in superfluid phase <sup>3</sup>He, 67.30.hr
   in superfluid phase <sup>4</sup>He, 67.25.dp
   videos (educational aids), 01.50.ff
Filters
   acoustic, *43.58.Kr
   electronic, 84.30.Vn
   optical, 42.79.Ci
Financial markets, 89.65.Gh
Fine structure
   atoms, 32.10.Fn
   molecules, 33.15.Pw
Finite difference methods, 02.70.Bf
   in atomic and molecular physics, 31.15.xf
   in fluid dynamics, 47.11.Bc
Finite element analysis, 02.70.Dh
   in biological physics, 87.10.Kn
   in fluid dynamics, 47.11.Fg
Finite-size systems
   phase transitions in, 64.60.an
Finite volume methods (in fluid dynamics), 47.11.Df
Fission-fusion reactions, 25.70.Jj
Fission reactions, 25.85.-w
Fission reactors
   design and components, 28.41.-i
   fuel cycles, 28.41.Vx
   fuel elements, 28.41.Bm
   moderators, 28.41.Pa
   radioactive wastes in, 28.41.Kw
   reactor cooling, 28.41.Fr
   reactor safety, 28.41.Te
   types of, 28.50.-k
Flagella, 87.16.Qp
Flames
   reactions in, 82.33.Vx
   reactive flows, 47.70.Pq
Flare stars, 97.30.Nr
Flavor symmetries, 11.30.Hv
Flight (motor systems), 87.19.lu
Floods, 92.40.Qk, *92.40.qp
Flow computation, 47.11.-j
Flow control, 47.85.L-
   drag reduction, 47.85.lb
```

```
flow noise reduction, 47.85.lf
Flow imaging (blood flow), MRI, 87.61.Np
Flow in quasi-one-dimensional systems, 47.60.-i
Flow instabilities
   general, 47.20.-k
   interfacial, 47.20.Ma
   non-Newtonian flows, 47.50.Gj
   in rheology, 83.60.Wc
Flowmeters, 47.80.-v
Flow receptivity, 47.20.Pc
Flow visualization, 47.80.Jk
Fluctuation phenomena
   biomolecules, 87.15.Ya
   magnetically ordered materials, 75.30.Mb
   nuclear reactions, 24.60.Ky
   plasma, 52.25.Gj
   quantum optics, 42.50.Lc
   statistical physics, 05.40.-a
   in superconductivity, 74.40.-n
     noise and chaos, 74.40.De
     nonequilibrium processes, 74.40.Gh
     quantum critical phenomena, 74.40.Kb
   valence fluctuations (diamagnetism and paramagnetism), 75.20.Hr
Fluid dynamics. see fluid flow
Fluid equation (plasma simulation), 52.65.Kj
Fluid flow
   biological, 47.63.-b
   compressible, 47.40.-x
   flow control, 47.85.L-
   instruments for, 47.80.-v
   laminar, 47.15.-x
   low-Reynolds number (creeping), 47.15.G-
   non-Newtonian, 47.50.-d
   rarefied gas dynamics, 47.45.-n
   reactive, radiative and nonequilibrium, 47.70.-n
   relativistic, 47.75.+f
   rotational, 47.32.-y
   through porous media, 47.56.+r
Fluidics, 47.85.Np
Fluidized beds, 47.55.Lm
Fluid mechanics, applied, 47.85.-g
Fluid planets
```

```
atmosphere, *96.15.H-, 96.15.Hy
   ionosphere, 96.15.Hy, *96.15.hk
   surfaces, 96.15.Lb
Fluids
   optical properties of, 78.15.+e
   quantum (see 67)
   statistical mechanics, 05.20.Jj
Fluorescence
   of atoms, 32.50.+d
   in biophysics, 87.64.kv
   in condensed matter, 78.55.-m
   of molecules, 33.50.Dq
   x-ray, 78.70.En
Fluoroscopy, 87.59.C-, 87.59.cf
Flute instability, 52.35.Py
Flux-line lattices, 74.25.Uv
Flux creep, 74.25.Wx
Foams, 82.70.Rr
   complex fluids, 47.57.Bc
   rheology, 83.80.lz
Fog
   atmospheric optics, 42.68.Ge
   meteorology, *92.60.J-, 92.60.Jq
Fokker-Planck equation
   kinetic theory of gases, 51.10.+y
   plasma simulation, 52.65.Ff
   statistical physics, 05.10.Gg
Folding
   structure of biomolecules, 87.15.Cc, 87.15.hm
Folds, tectonic, 91.55.Hj
Food, rheology of, 83.80.Lz
Foodwebs (ocean biology), *92.20.jq
Forced convection, 44.27.+g
Forces
   interatomic, 34.20.Cf
   intermolecular, 34.20.Gj
   measurement of, 07.10.Pz
   in Newtonian mechanics, 45.20.da
   nuclear, 21.30.-x
Forensic science, 89.20.Mn
   forensic acoustics, *43.72.Uv
Formation heat, 82.60.Cx
```

```
Form factors
   electromagnetic, 13.40.Gp
   photon-atom interactions, 34.50.-s
Forming, 81.20.Hy
Fossil fuels, 89.30.A-
   coal, 89.30.ag
   oil, 89.30.aj
   natural gas, 89.30.an
   petroleum, 89,30.aj
Fourier analysis, 02.30.Nw
Fourier optics, 42.30.Kq
Fourier transform spectra, 33.20.Ea
Four-wave mixing, 42.65.Hw
Four-wave mixing spectroscopy
   nonlinear optical spectroscopy, 78.47.nj
Fourth generation quarks, 14.65.Jk
Fractals
   fluid dynamics, 47.53.+n
   nonlinear dynamics, 05.45.Df
   in phase transitions, 64.60.al
   structure of disordered solids, 61.43.Hv
Fractional quantum Hall effect, 73.43.-f
Fractional statistics systems, 05.30.Pr
Fracture
   continuum mechanics of solids, 46.50.+a
   effects of materials treatments, 81.40.Np
   nanoscale systems, 62.25.Mn
   plate tectonics, 91.55.Jk
   rheology, 83.60.Uv
   rock mechanics, 91.60.Ba
   structural failure of materials, 62.20.mm
Fragmentation (nuclear reactions), 25.70.Mn, 25.70.Pq
Franck-Condon factors, 33.70.Ca
Free-electron devices, 52.59.Rz
Free-electron lasers, 41.60.Cr
Free energy, 05.70.Ce, 51.30.+i, 65.40.G-
Free-induction decay (quantum optics), 42.50.Md
Free molecular flows, 47.45.Dt
Free polarization decay
   in ultrafast pump/probe spectroscopy, 78.47.js
Free radicals
   chemical reactions, 82.30.Cf
```

```
EPR of, 76.30.Rn
F region, ionosphere, 94.20.dj
Frenkel defects, 61.72.jn
Frenkel excitons, 71.35.Aa
Frequency, measurement of, 06.30.Ft
Frequency conversion (nonlinear optics), 42.65.Ky
Frequency convertors, optical, 42.79.Nv
Frequency standards, 06.20.fb
   in astronomical instrumentation, 95.55.Sh
Fresnel zone plates, 42.79.Ci
Friction
   atomic scale, 68.35.Af
   internal, 62.40.+i
     evidence of dislocations, 61.72.Hh
   materials treatment effects, 81.40.Pq
   mechanical properties of solids, 62.20.Qp
   structural mechanics, 46.55.+d
Friction force microscopy
   instrumentation of, 07.79.Sp
Fuel
   for advanced vehicles, 88.85.M-
   biofuels, 88.20.F-
   for fission reactors, 28.41.Bm
   fossil fuels, 89.30.A-
     coal, 89.30.ag
     oil, petroleum, 89.30.aj
       oil prospecting; pipelines, 93.85.Tf
     natural gas, 89.30.an
       as fuel for advanced vehicles, 88.85.mf
   for fusion reactors, 28.52.Cx, 52.57.Kk
Fuel cells
   components, 88.30.J-
     current converters, 88.30.jr
     stacks, 88.30.jn
     fuel processor, 88.30.jp
     heat recovery system, 88.30.jt
   component materials, 88.30.M-
     composite materials, 88.30.mj
     inorganic proton conductors, 88.30.mg
   systems, 88.30.G-
     design and simulation, 88.30.gg
   types of
```

```
alkaline fuel cells, 88.30.ph
     direct methanol fuel cells, 88.30.pf
      molten carbonate fuel cells
 in applied electrochemistry, 82.47.Lh
 in hydrogen energy, 88.30.pm
      phosphoric acid fuel cells
  in applied electrochemistry, 82.47.Pm
 in hydrogen energy, 88.30.pj
      polymer electrolyte fuel cells (applied electrochemistry), 82.47.Nj
      proton exchange membrane fuel cells (PEM)
 in applied electrochemistry, 82.47.Gh
 in hydrogen energy, 88.30.pd
      regenerative fuel cells, 88.30.pp
     solid oxide fuel cells
 in applied electrochemistry, 82.47.Ed
 in hydrogen energy, 88.30.pn
Fullerenes
   absorption and reflection spectra, 78.40.Ri
   electrical conductivity, 72.80.Rj
   electronic structure, 71.20.Tx
   fabrication, 81.05.ub
   film growth, 68.55.ap
   infrared and Raman spectra, 78.30.Na
   structure of, 61.48.-c
   superconductivity, 74.70.Wz
   surface structure of, 68.35.bp
   thin films
     electrical conductivity, 73.61.Wp
     optical properties, 78.66.Tr
Functional analysis, 02.30.Sa
   quantum mechanics, 03.65.Db
Functional approximation, algorithms for, 02.60.Gf
Functional MRI, 87.19.lf, 87.61.Qr
Function generators, 84.30.Ng
Fundamental constants, 06.20.Jr
Fungal diseases, 87.19.xg
Furnaces, 07.20.Hy
Fuses, 84.32.Vv
Fusion
   <sup>2</sup>H-induced, 25.45.-z
   heavy-ion induced, 25.70.Jj
   inertial confinement
```

```
heavy-ion, 52.58.Hm
     laser, 52.57.-z
     light-ion, 52.58.Ei
   magnetic confinement, 52.55.-s
   unstable-nuclei-induced, 25.60.Pj
Fusion-fission reactions, 25.70.Jj
Fusion fuels, fast ignition of, 52.57.Kk
Fusion products effects, 52.55.Pi
Fusion reactors
   fueling and ignition, 28.52.Cx
   reactor safety, 28.52.Nh
   structural materials for, 28.52.Fa
Fuzzy logic, 07.05.Mh
Galactic center, 98.35.Jk
Galactic mass, 98.35.Ce, 98.62.Ck
Galactic radioactivity (nuclear astrophysics), 26.30.Jk
Galactic winds, 98.35.Nq, 98.62.Nx
Galaxies
   active, 98.54.-h
   clusters of, 98.65.Cw
   local group, 98.56.-p
   normal, 98.52.-b
   primordial, 98.54.Kt
   properties of, 98.62.-g
   protogalaxies, 98.54.Kt
Galerkin method, 02.70.Dh
Galvanomagnetic effects
   metals and alloys, 72.15.Gd
   semiconductors and insulators, 72.20.My
   thin films, 73.50.Jt
Games, physics of, 01.80.+b
Game theory, 02.50.Le
Gamma-ray detectors, 07.85.Fv, 29.40.-n
   superconducting, 85.25.0j
Gamma-ray lasers, 42.55.Vc
Gamma rays
   astronomical observations, 95.85.Pw
   atmospheric emissions, 92.60.hx
   bursts, 98.70.Rz
   effects on biological systems, 87.53.-j
   in laser-plasma interactions, 52.38.Ph
   in photochemistry, 82.50.Kx
```

```
radiation damage by, 61.80.Ed
Gamma-ray sources, 07.85.-m
   astronomical, 98.70.Rz
Gamma-ray spectroscopy
   chemical analysis, 82.80.Ej
   condensed matter, 76.80.+y
   instrumentation, 07.85.Nc
   nuclear physics, 29.30.Kv
Gamma-ray telescopes, 95.55.Ka
Gamma transitions, 23.20.Lv
Ganymede, 96.30.lf
Garnet devices, 85.70.Ge
Garnets (ferrites), 75.50.Gg
Gas chromatography, 82.80.Bg
Gas dynamic traps (magnetic confinement), 52.55.Jd
Gases
   in chemical oceanography, 92.20.Uv
   interplanetary, 96.50.Dj
   rarefied, dynamics of, 47.45.-n
   ultracold, 67.85.-d
Gas-filled counters, 29.40.Cs
Gas lasers, 42.55.Lt
Gas-liquid flows, 47.55.Ca
Gas-liquid interfaces, 68.03.-g
Gas sensors, 07.07.Df
Gas-surface interactions, 34.35.+a
Gauge bosons, 14.70.-e
   production in electron-positron interactions, 13.66.Fg
Gauge field theories, 11.15.-q
   topologically massive, 11.15.Wx
   Chern-Simons, 11.15.Yc
Gauge sector extensions (electroweak interactions), 12.60.Cn
Gauge/string duality, 11.25.Tq
Gels
   aerogels, reactions in, 82.33.Ln
   as disperse systems, 82.70.Gg
   microgels, rheology of, 83.80.Kn
   rheology of, 83.80.Kn
   thermoreversible gels, 83.80.Kn
   rheological properties, 83.80.Kn
Genealogical trees (complex systems), 89.75.Hc
General physics (physics education), 01.55.+b
```

```
General relativity. See 04
Genetic diseases, 87.19.xk
Genetic engineering, 87.85.md
Genetic switches
   in biological complexity, 87.18.Cf
Genomics, 87.18.Wd
   techniques in biotechnology, 87.80.St, 87.85.mg
Genomic techniques, 87.80.St
Geochemical cycles
   geochemistry, 91.67.Nc
   meteorology, 92.60.hn
Geochemical processes, *91.67.F-, 91.67.Fx
   intraplate, *91.67.fh
   mid-oceanic ridge, *91.67.ff
   subduction zone, *91.67.fc
Geochemistry
   fluid and melt inclusion, 91.67.St
   fresh water, 92.40.Bc
   low-temperature, 91.67.Vf
   organic and biogenic, 91.67.Uv
   radiogenic isotopic, 91.67.Qr
   sedimentary, 91.67.Ty
   stable isotopic, 91.67.Rx
Geochronology, 91.80.+d, *91.80.-d
   isotopic dating, *91.80.Hj
   sedimentary, *91.80.Wx
   sidereal, *91.80.Ef
Geodesy, 91.10.-v
Geodetic reference systems, 91.10.Ws
Geodetic techniques, *91.10.P-, 91.10.Pp
Geoelectricity, 91.25.Qi
Geographical regions, 93.30.-w
Geological materials
   physical properties, 91.60.-x
   rheology, 83.80.Nb
Geological time, 91.70.-c
Geology, 91.65.-n
Geomagnetism, 91.25.-r
   geomagnetic excursion, 91.25.Xg
   geomagnetic induction, 91.25.Wb
   magnetic anomalies, 91.25.Rt
   magnetic fabrics, 91.25.St
```

```
magnetic field reversals, 91.25.Mf
   remagnetization, 91.25.Ux
   spatial variations in, 91.25.G-
   time variations in, *91.25.L-, 91.25.Le
Geometrical methods (classical mechanics), 45.10.Na
Geometrical optics, 42.15.-i
Geometric inequalities, 02.40.Ft
Geometric mechanics, 02.40.Yy
Geometric phases (quantum mechanics), 03.65.Vf
Geometry
   algebraic, 02.10.-v
   differential, 02.40.Hw, 02.40.Ma
   Euclidean and projective, 02.40.Dr
   noncommutative, 02.40.Gh
   Riemannian, 02.40.Ky
Geophysical instrumentation, 93.85.-q
Geophysical prospecting (acoustical methods), *43.40.Ph
Geophysics. See 91
Geothermal energy
   brines and their dissolved matter, 88.10.J-
     combined minerals and metals extraction, 88.10.jp
     metals extraction, 88.10.jn
     minerals extraction, 88.10.jj
   geothermal electricity production, 88.10.H-
     binary-cycle steam plants, 88.10.hh
     dry steam plants, 88.10.hd
     flash steam plants
   ground heat, 88.10.C-
     continental geothermal energy, 88.10.ch
     geothermal heat pumps, 88.10.cd
     heating and cooling of buildings, 88.10.cn
     oceanic geothermal energy, 88.10.cj
     space heating, 88.10.cn
     terrestrial geothermal flux, 88.10.cf
   hot dry rock, 88.10.Eb
   hydrothermal reservoirs, 88.10.F-
     down hole pumps, 88.10.fh
     hot springs, 88.10.fb
     hot water from wells, 88.10.fe
   igneous systems, 88.10.Eb
   reservoir engineering, 88.10.G-
     high-temperature tools, 88.10.gk
```

```
imaging fluid flow, 88.10.gf
      prediction models, 88.10.gc
     rock fracture, 88.10.gn
     simulation, 88.10.gc
     site characterization, 88.10.gp
Geothermy, 91.35.Dc
Germanium, doping and ion implantation of, 61.72.uf
Gettering effect
   crystals, 61.72.Yx
   surface treatments, 81.65.Tx
g factor, 32.10.Fn, 33.15.Pw, 71.18.+y
GHZ states, 03.65.Ud
Giant magnetoresistance, 75.47.De
   magnetic memory, 85.75.Bb
Giant resonances (nuclear reactions), 24.30.Cz
Giant stars, 97.20.Li
Ginzburg-Landau theory (superconductivity), 74.20.De
Glaciology, *92.40.V-, 92.40.Vq
   avalanches, snow melt, 92.40.Vq, *92.40.vw
   ice cores, 92.40.Vq, *92.40.vv
Glass-based composites, 81.05.Pj
Glasses
   disordered solids
     vibrational states in, 63.50.Lm
   electrical conductivity, 72.80.Ng
   electronic structure, 71.23.Cq
   fabrication, 81.05.Kf
   magnetic materials, 75.50.Lk
   nonelectronic thermal conduction in, 66.70.Hk
   optical materials, 42.70.Ce
   photoluminescence, 78.55.Qr
   rheology, 83.80.Ab
   self-diffusion and ionic conduction in, 66.30.hh
   solid-solid transitions, 72.80.Ng
   structure, 61.43.Fs
   surface structure of, 68.35.bj
   thermal properties, 65.60.+a
   thin films
     electrical conductivity, 73.61.Jc
     optical properties, 78.66.Jg
Glass transitions, 64.70.P-
   in colloids, 64.70.pv
```

```
in liquid crystals, 64.70.pp
   in liquids, 64.70.pm
   in metallic glasses, 64.70.pe
   in nonmetallic glasses, 64.70.ph
   in polymers, 64.70.pj
   theory and modeling of, 64.70.Q-
Glauber model, 24.10.Ht
Glauber scattering, 11.80.La
Glia (in neuroscience), 87.19.lk
Global analysis, 02.40.Vh
Global change, 92.70.-j
   cryospheric, 92.70.Ha
   from geodesy, 91.10.Xa
   impacts of, 92.70.Mn
   land cover change, 92.70.St
   solar variability impact on, 92.70.Qr
Global warming, *92.30.Np, 92.70.Mn
Globular clusters, 98.20.Gm
Glow discharge, 52.80.Hc
Glues (bioproduct from biomass), 88.20.rg
Gluons
   in nuclei, 24.85.+p
   particle properties of, 14.70.Dj
Gradient-index (GRIN) devices, 42.79.Ry
   fiber-optical, 42.81.Ht
Grain boundaries, 61.72.Mm
Grand unified theories, 12.10.Dm
Granular flow
   classical mechanics of discrete systems, 45.70.Mg
   complex fluids, 47.57.Gc
Granular materials
   fabrication, 81.05.Rm
   rheology, 83.80.Fg
   superconductivity, 74.81.Bd
Granular systems, classical mechanics of, 45.70.-n
Granular superconductors, 74.81.Bd
Graphite, 81.05.uf
Graphene
   electronic structure, 73.22.Pr,
   electronic transport, 72.80.Vp
   films, 68.65.Pq
   material science aspect of, 81.05.ue
```

```
optical properties, 78.67.Wj
   phonons in, 63.22.Rc
   structure, 61.48.Gh
   thermal properties, 65.80.Ck
Graph theory, 02.10.0x
Grasers (gamma-ray lasers), 42.55.Vc
Gratings
   holographic, 42.40.Eq
   optical elements, 42.79.Dj
Gravimeters, 04.80.Nn
Gravimetric measurements, 91.10.Pp
Gravitation
   astrophysics, 95.30.Sf
   general theory of (see 04)
Gravitational constant, 04.80.-y, 06.20.Jr, 95.30.Ft
Gravitational fields
   comets, 96.25.Nc
   fluid planets, 96.15.Ef
   Moon, 96.20.Jz
   solid surface planets, 96.12.Fe
Gravitational lenses, 95.30.Sf, 98.62.Sb
Gravitational waves
   astronomical observations, 95.85.Sz
   detectors, 04.80.Nn, 95.55.Ym
   general relativity, 04.30.-w
Gravitons, 14.70.Kv
Gravity
   Earth's, 91.10.-v
   experimental test of gravitational theories, 04.80.Cc
   higher-dimensional, 04.50.-h
   in marine geology, 91.50.Kx
   modified theories of, 04.50.Kd
   Moon's, 96.20.Jz
   quantum, 04.60.-m
   self-gravitating systems, 04.40.-b
   supergravity, 04.65.+e
   time variable, 91.10.Op
Gravity waves
   hydrodynamic waves (fluids), 47.35.Bb
   meteorology, 92.60.hh
Greenhouse effect, 92.70.-j
Greenhouse gases, *92.30.Np
```

```
Greenland, 93.30.Kh
GRIN devices, 42.79.Ry, 42.81.Ht
Ground water, *92.40.K-, 92.40.Kf
   aquifers, 92.40.Kf, *92.40.kh
Group theory
   atomic and molecular physics, 31.15.xh
   mathematics, 02.20.-a
   nuclear physics, 21.60.Fw
   quantum mechanics, 03.65.Fd
Gunn effect devices, 85.30.Fg
Gyrofluid and gyrokinetic plasma simulations, 52.65.Tt
Gyrokinetics, in plasmas, 52.30.Gz
Gyros, fiber-optical, 42.81.Pa
Gyroscope motion, 45.40.Cc
Gyrotrons, 84.40.lk
Hadronic decays
   baryons, 13.30.Eg
   mesons, 13.25.-k
Hadrons
   interactions induced by
     high and super-high energy, 13.85.-t
     low and intermediate energy, 13.75.-n
   mass models, 12.40.Yx
   neutrino interactions with, 13.15.+g
   nuclear forces, 21.30.Fe
   photon and charged-lepton interactions with, 13.60.-r
   production by electron-positron collisions, 13.66.Bc
   properties of
     baryons, 14.20.-c
     mesons, 14.40.-n
   R-hadrons, 14.80.Pq
Hall effect
   quantum, 73.43.-f
   in semiconductors, 72.20.My
   in thin films, 73.50.Jt
Hall effect devices, 85.30.Fg
   hybrid, 85.75.Nn
Hamiltonian mechanics, 45.20.Jj, 47.10.Df
Handbooks, 01.30.Kj
Hardening (materials treatments), 81.40.Cd, 81.40.Ef
Hardness
   of solids, 62.20.Qp
```

```
in structural mechanics, 46.55.+d
Harmonic generation (nonlinear optics), 42.65.Ky
Harmonic oscillators, 03.65.Ge
Hartree-Fock approximation
   electronic structure of atoms and molecules, 31.15.xr
   electronic structure of solids, 71.15.Ap
   nuclear-structure models, 21.60.Jz
Hawking effects, 04.60.-m
Hazards, natural (biogeosciences), *91.62.Ty
Hearing, *43.66.-x, 43.66.+y
   sensory systems, 87.19.lt
Hearing aids, *43.66.Ts
Heart, hemodynamics of, 87.19.ug
Heat capacity
   of amorphous solids and glasses, 65.60.+a
   in chemical thermodynamics, 82.60.Fa
   of crystalline solids, 65.40.Ba
   of liquids, 65.20.Jk
   at magnetic critical points, 75.40.Cx
   of nanocrystals, 65.80.-g
Heat conduction, 44.10.+i
Heat engines, 07.20.Pe
Heaters, 07.20.Hy
Heating
   buildings
     energy use in heating/cooling of, 88.05.Sv
     geothermal, 88.10.cn
     solar
       active space/water heating, 88.40.mg
       heating systems, 88.40.me
       passive space/water heating, 88.40.mj
   plasma
     by dc fields, 52.50.Nr
     ECR heating, 52.50.Sw
     ICR heating, 52.50.Qt
     by laser beams, 52.50.Jm
     by microwaves, 52.50.Sw
     by particle beams, 52.50.Gj
     by rf fields, 52.50.Qt
     by shock waves, 52.50.Lp
Heat pumps
   geothermal, 88.10.cd
```

```
thermal instruments, 07.20.Pe
Heat transfer
   analytical and numerical techniques, 44.05.+e
   boundary layer, 44.20.+b
   channel and internal, 44.15.+a
   convective, 44.25.+f, 44.27.+g
   Earth's interior, 91.35.Dc
   heat-pulse propagation in solids, 66.70.-f
   inhomogeneous and porous media, 44.30.+v
   multiphase systems, 44.35.+c
   radiative, 44.40.+a
   in turbulent flows, 47.27.T-
Heat treatments, effects on microstructure, 81.40.Gh
Heavy-fermion solids
   diamagnetism and paramagnetism, 75.20.Hr
   electron states, 71.27.+a
   magnetically ordered materials, 75.30.Mb
   noncuprate superconductors, 74.70.Tx
Heavy-ion nuclear reactions
   low and intermediate energy, 25.70.-z
   relativistic, 25.75.-q
Heavy-ion spectroscopy, 29.30.-h
Heavy-particle decay, 23.70.+j
Heavy-particle dosimetry, 87.53.Bn
Heavy quark theory, 12.39.Hg
Heavy quarkonia, 14.40.Pq
Heinrich events (oceanography), 92.05.Ek
Heisenberg model, 75.10.Jm
Hele-Shaw flows, 47.15.gp
Heliacs, 52.55.Hc
Helicity amplitudes, 11.80.Cr
Helicity injection (magnetic confinement), 52.55.Wq
Heliopause, 96.50.Ek
Helioseismology, 96.60.Ly
Helium
   burning in stars, 26.20.Fj
   liquid mixtures, 67.60.-g
   solid, 67.80.-s
<sup>3</sup>He
   -induced nuclear reactions, 25.55.-e
   normal phase, 67.30.E-
     excitations in, 67.30.em
```

```
films in, 67.30.ej
      hydrodynamics in, 67.30.eh
      magnetic properties of, 67.30.er
     thermodynamic properties, 67.30.ef
     transport processes in, 67.30.eh
   solid phase, 67.80.D-
   superfluid phase, 67.30.H-
     films in, 67.30.hr
      hydrodynamics in, 67.30.hb
     impurities in, 67.30.hm
     interfaces in, 67.30.hp
     spin dynamics of, 67.30.hj
     transport processes in, 67.30.hb
      vortices in, 67.30.he
<sup>4</sup>He, 67.25.-k
   -induced nuclear reactions, 25.55.-e
   normal phase
     films in, 67.25.bh
     hydrodynamics of, 67.25.bf
     thermodynamic properties, 67.25.bd
     transport processes in, 67.25.bf
   solid phase, 67.80.B-
   superfluid phase, 67.25.D-
     critical phenomena in, 67.25.dj
     excitations in, 67.25.dt
     films in, 67.25.dp
     hydrodynamics of, 67.25.dg
      relaxation phenomena, 67.25.du
     sound in, 67.25.dt
     thermodynamic properties, 67.25.de
     vortices in, 67.25.dk
   superfluid transition in, 67.25.dj
   supersolid, 67.80.bd
Hemodynamics, 87.19.U-
   biological fluid dynamics, 47.63.-b, 87.85.gf
   blood-brain barrier, 87.19.um
   of heart and lungs, 87.19.ug
   of peripheral vascular system, 87.19.uj
   physiological materials (rheology), 83.80.Lz
Herbig-Haro objects, 97.21.+a
Hertzsprung-Russell diagrams, 97.10.Zr
Heterostructures
```

```
electrical properties, 73.40.-c
   electron states and collective excitations in, 73.21.-b
   magnetic properties of, 75.70.Cn
   optical properties, 78.66.-w
   photoemission and photoelectron spectra, 79.60.Jv
   structure and nonelectronic properties of, 68.65.-k
   superconducting, 74.78.Fk
H I and H II regions
   external galaxies, 98.58.Ge, 98.58.Hf
   Milky Way, 98.38.Gt, 98.38.Hv
Higgs bosons
   charged Higgs bosons, 14.80.Fd
   neutral Higgs bosons, 14.80.Ec
   production in electron-positron interactions, 13.66.Fg
   standard model, 14.80.Bn
   supersymmetric Higgs bosons, 14.80.Da
Higgs sector extensions, 12.60.Fr
High-coercivity materials, 75.50.Vv
High-current technology, 84.70.+p
High-energy reactions, hadron-induced, 13.85.-t
High-field effects (conductivity)
   bulk matter, 72.20.Ht
   thin films, 73.50.Fq
High-frequency discharges, 52.80.Pi
High-frequency effects (conductivity)
   bulk matter, 72.30.+q
   thin films, 73.50.Mx
High-frequency plasma confinement, 52.58.Qv
High-pressure effects
   in solids and liquids, 62.50.-p
   structural properties of materials, 81.40.Vw
High pressure production and techniques, 07.35.+k
High resolution transmission electron microscopy (HRTEM), 68.37.0g
High-speed techniques, 06.60.Jn
High-T<sub>c</sub> superconductors
   cuprates, 74.72.-h
   devices, 85.25.-j
   general properties, 74.25.-q
   theory of, 74.20.-z
   transition temperature, 74.10.+v, 74.62.-c
High-temperature techniques and instrumentation, 07.20.Ka
High-voltage diodes, 52.59.Mv
```

```
High-voltage technology, 84.70.+p
H I shells, 98.58.Nk
Histones, 87.16.Sr
History of science, 01.65.+g
   acoustics, *43.10.Mq
Hole burning
   atomic spectra, 32.30.-r
   condensed matter spectra, 78.40.-q
   molecular spectra, 33.20.-t
Hole burning spectroscopy
   nonlinear optical spectroscopy, 78.47.nd
Hole doped materials (cuprate superconductors), 74.72.Gh
Holograms
   computer generated, 42.40.Jv
   volume, 42.40.Pa
Holographic optical elements, 42.40.Eq
Holography
   acoustical, *43.35.Sx, *43.60.Sx
   electron, 61.05.jp
   optical, 42.40.-i
   recording materials for, 42.70.Ln
Hooke's law
   mechanical properties of solids, 62.20.D-
Hopping transport, 72.20.Ee
Hormones, 87.14.Lk
Hot atom reactions, 82.30.Cf
Hot carriers, 72.20.Ht, 73.50.Fq
Hot working, 81.40.Gh
Hubbard model
   electronic structure, 71.10.Fd
   magnetic ordering (quantized spin model), 75.10.Jm
   superconductivity, 74.20.-z
Hubble constant, 98.80.Es
Hubble Space Telescope, 95.55.Fw
Hückel method (atomic and molecular physics), 31.15.bu
Humidity, 92.60.Jq, *92.60.jk
Hybrid integrated circuits
   electronic, 85.40.Xx
   optical, 42.82.Fv
Hydraulic machinery, 47.85.Kn
Hydraulics, 47.85.Dh
Hydrodynamic instability
```

```
laser inertial confinement, 52.57.Fg
Hydrodynamic models, nuclear reactions, 24.10.Nz
Hydrodynamics
   applied fluid mechanics, 47.85.Dh
   astrophysical applications, 95.30.Lz
   fluids, 47.35.-i
   in normal phase helium-3, 67.30.eh
   in normal phase helium-4, 67.25.bf
   in quantum fluids, 67.10.Jn
   superfluidity, 47.37.+q
   in superfluid phase helium-3, 67.30.hb
   in superfluid phase helium-4, 67.25.dg
Hydroelasticity, 46.40.Jj
Hydroelectric power
   conventional hydropower, 88.60.J-
     dams, 88.60.jb
     diversion facilities, 88.60.je
     impoundment facilities, 88.60.jb
      pumped storage facilities, 88.60.jg
   emerging hydropower technologies, 88.60.N-
     energy from ocean currents, 88.60.nm
     energy from ocean waves, 88.60.nf
     marine thermal gradients, 88.60.nj
      natural water flow in rivers, 88.60.np
     ocean thermal energy, 88.60.nr
     tidal energy, 88.60.nh
   hydroturbines, 88.60.K-
     cross-flow turbines, 88.60.kc
     Francis hydropower turbines, 88.60.kf
     free-flow turbines, 88.60.kj
     impulse turbines, 88.60.km
     Pelton turbines, 88.60.kp
      propeller turbines, 88.60.kr
      reaction turbines, 88.60.kt
Hydrogen
   21-cm lines
     external galaxies, 98.58.Ge
      Milky Way, 98.38.Gt
   burning in stars, 26.20.Cd
   fuel in advanced vehicles, 88.85.mh
   fuel from biomass, 88.20.fn
   isotopes, 67.63.-r, 67.80.F-
```

```
atomic hydrogen, 67.63.Gh, 67.80.fh
     molecular hydrogen, 67.63.Cd, 67.80.ff
   solid, 67.80.F-
Hydrogen-antihydrogen quasimolecules, 31.30.jz
Hydrogen bonding
   in biomolecules, 87.15.Fh
   in chemical reactions, 82.30.Rs
   in molecules, 33.15.Fm
Hydrogen in fuel cell technology
   corrosion protection (in hydrogen energy systems), 88.30.Nn
   fuel cells
     components, 88.30.J-
       current converters, 88.30.jr
       stacks, 88.30.jn
       fuel processor, 88.30.jp
       heat recovery system, 88.30.jt
     component materials, 88.30.M-
       composite materials, 88.30.mj
       inorganic proton conductors, 88.30.mg
     systems, 88.30.G-
       design and simulation, 88.30.gg
     types of
       alkaline fuel cells, 88.30.ph
       direct methanol fuel cells, 88.30.pf
       molten carbonate fuel cells, 88.30.pm
       phosphoric acid fuel cells, 88.30.pj
       proton exchange membrane fuel cells (PEM), 88.30.pd
       regenerative fuel cells, 88.30.pp
       solid oxide fuel cells, 88.30.pn
     hydrogen production, 88.30.E-
       biological photolytic hydrogen, 88.30.er
       electrochemical photolytic hydrogen, 88.30.ep
       electrolytic hydrogen, 88.30.em
       reforming biomass and wastes, 88.30.et
       thermochemical hydrogen, 88.30.ej
       water-gas-shift (WGS) reaction, 88.30.ew
     hydrogen storage, 88.30.R-
       carbon nanotubes, 88.30.rh
       inorganic metal hydrides, 88.30.rd
       liquid hydrocarbons and alcohols, 88.30.rj
       organic materials, 88.30.rf
Hydrography, 92.10.Yb
```

```
Hydrology, 92.40.-t
Hydromagnetic plasma instability, 52.35.Py
Hydrometeorology, 92.40.Zg
Hydrophilic effects, 82.70.Uv
   chemical reactions, 82.30.Rs
Hydrophones, *43.38.Pf
Hydrosphere
   chemical composition, *91.67.gh
Hydrostatics, 47.85.Dh
Hydrothermal systems
   geochemistry of, 91.67.Jk
   oceanography, 92.05.Lf
   volcanology of, 91.40.Ge
Hygrometry, 07.07.Vx
Hyperfine interactions, 31.30.Gs
Hyperfine structure
   atoms, 32.10.Fn
   molecules, 33.15.Pw
Hypernuclei, 21.80.+a
Hyperonic atoms and molecules, 36.10.Gv
Hyperon-induced reactions, 25.80.Pw
Hyperon-nucleon reactions, 13.75.Ev
Hyperons, 14.20.Jn
Hypersonic flows, 47.40.Ki
Hyperspherical methods (atomic physics), 31.15.xj
Hysteresis
   in ferroelectricity, 77.80.Dj
   in magnetism, 75.60.-d
     magnetic annealing, 75.60.Nt
     magnetization curves, Barkhausen effects, 75.60.Ej
Ice
   atmospheric, 42.68.Ge
   rheology of, 83.80.Nb
   sea, 92.10.Rw, *92.40.vx
Icebergs, 92.40.Vq, *92.40.vr
ICR plasma heating, 52.50.Qt
Image convertors, 42.79.Ls
Image forming, 42.30.Va
   atmospheric optics, 42.68.Sq
Image intensifiers, 42.79.Ls
Image processing
   algorithms, 07.05.Pj
```

```
in astronomy, 95.75.Mn
   flow visualization, 47.80.Jk
   in medical imaging, 87.57.C-, 87.57.N-
   in optics, 42.30.-d
Image reconstruction
   in medical imaging, 87.57.nf
   in optics, 42.30.Wb
Imaging detectors
   in astronomy, 95.55.Aq
   optical devices, 42.79.Pw
Immune system diseases, 87.19.xw
Impedance
   acoustic, *43.20.Rz, *43.28.En
     measurement of, *43.58.Bh
   electrical, 84.37.+q
Implosions, inertial confinement, 52.57.Fg
Impurities
   absorption spectra of, 78.40.-q
   in crystals, 61.72.S-
     impurity concentration, 61.72.sd
     impurity distribution, 61.72.sh
     impurity gradients, 61.72.sm
     impurity implantation, 61.72.U-
   diffusion of, 66.30.J-
   effects on superconductivity, 74.62.Dh
   electronic structure, 71.55.-i
     at surfaces and interfaces, 73.20.Hb
   EPR spectra, 76.30.-v
   implantation, 61.72.uf, 61.72.uj, 61.72.up
   magnetic, 75.30.Hx
   in plasma, 52.25.Vy
   in solid <sup>3</sup>He, 67.80.dj
   in solid surfaces and solid-solid interfaces, 68.35.Dv
   in superfluid <sup>3</sup>He, 67.30.hm
   in thin films, 68.55.Ln
Inclusions, 61.72.Qq
Incommensurate solids, 61.44.Fw
Indian Ocean, 93.30.Nk
INDO calculations, 31.15.bu
Inductance measurement, 84.37.+q
Inductors, 84.32.Hh
Industry
```

```
energy use in, 88.05.Vx
   laser applications in, 42.62.Cf
   material processing flows in, 47.85.M-
   research and development, 89.20.Bb
Inelastic scattering
   of atoms and molecules, 34.50.-s
   in deuteron-induced reactions, 25.45.De
   in hadron-induced reactions, 13.85.-t
   in lepton-induced reactions, 25.30.-c
   in meson-induced reactions, 25.80.Ek
   in nucleon-induced reactions, 25.40.Fq
   in triton-, <sup>3</sup>He-, and <sup>4</sup>He-induced reactions, 25.55.Ci
Inertial confinement
   heavy-ion, 52.58.Hm
   laser, 52.57.-z
   light-ion, 52.58.Ei
Inference methods, 02.50.Tt
Inflationary universe, 98.80.Cq
Information theory, 89.70.-a
   channel capacity in, 89.70.Kn
   communication complexity in, 89.70.Hj
   computational complexity in, 89.70.Eg
   entropy in, 89.70.Cf
   general biological information, 87.10.Vg
   in neuroscience, 87.19.lo
Infrared detectors, 07.57.Kp
   astronomy instrumentation, 95.55.Aq
   optoelectronic, 85.60.Gz
   superconducting, 85.25.Pb
Infrared excess (extrasolar planets), 97.82.Jw
Infrared optical materials, 42.70.Km
Infrared radiation
   astronomical observations, 95.85.-e
   effects on biological systems, 87.50.W-
   galactic and extragalactic, 98.70.Lt
   interstellar, 98.38.Jw, 98.58.Jg
   irradiation effects of, 61.80.Ba
   in photochemistry, 82.50.Bc
   scattering of, in biophysics, 87.64.Cc
   sources of, 07.57.Hm, 42.72.Ai
Infrared spectra
   of atoms, 32.30.Bv
```

```
in biophysics, 87.64.km
   of disordered solids, 78.30.Ly
   of fullerenes, 78.30.Na
   of insulators, 78.30.Am
   of liquids, 78.30.C-
     inorganic liquids, 78.30.cc
     ionic liquids, 78.30.cd
     organic liquids, 78.30.cb
     solutions, 78.30.cd
   of macro- and polymer molecules, 36.20.Ng
   of metals and alloys, 78.30.Er
   of molecules, 33.20.Ea
   of nonmetallic inorganics, 78.30.Hv
   of organic solids, 78.30.Jw
   of polymers, 78.30.Jw
   of semiconductors
     III-V, and II-VI semiconductors, 78.30.Fs
     elemental semiconductors, 78.30.Am
Infrared spectrometers, 07.57.Ty
Infrared spectroscopy
   in biophysics, 87.64.km
   in chemical analysis, 82.80.Gk
Infrasound, *43.28.Dm
Inhomogeneous superconductors, 74.81.-g
   amorphous superconductors, 74.81.Bd
   granular superconductors, 74.81.Bd
   Josephson junction arrays, 74.81.Fa
Initial value problem, 04.20.Ex
Injection lasers, 42.55.Px
Injection molding, 83.50.Uv
Inner-shell ionization, 32.80.Hd
Inorganic compounds
   band structure, 71.20.Ps
   crystal structure, 61.66.Fn
Instruments
   acoustical, *43.58.-e, 43.58.+z
   for astronomy, 95.55.-n
   for atomic and molecular physics, 07.77.-n
   for biophysics, 87.80.-y
   common to several branches of physics and astronomy (see 07)
   for elementary particle and nuclear physics (see 29)
   environmental effects on, 07.89.+b
```

```
for environmental pollution measurements, 07.88.+y
   for fluid dynamics, 47.80.-v
   for geophysics, 93.85.-q
   musical, 43.75.+a, *43.75.-z
   for plasma diagnostics, 52.70.-m
   spaceborne and space research, 07.87.+v
   for space plasma physics, ionosphere, and magnetosphere, 94.80.+g
Insulating parent compounds (cuprate superconductors), 74.72.Cj
Insulation (foam) as a bioproduct from biomass, 88.20.rr
Insulator-metal transitions, 71.30.+h
Insulators
   absorption spectra, 78.40.Ha
   band structure, 71.20.Ps
   conductivity of, 72.20.-i
     specific insulators, 72.80.Sk
   dielectric devices, 85.50.-n
   film growth, 68.55.aj
   photoemission and photoelectron spectra of, 79.60.Bm
   radiation effects of, 61.82.Ms
   thin films (conductivity), 73.61.Ng
Integrable systems, 02.30.lk
Integral equations, 02.30.Rz
Integral transforms, 02.30.Uu
Integrated circuits, 85.40.-e
   superconducting, 85.25.Hv
Integrated optics, 42.82.-m
Integrative biology
   in biomedical engineering, 87.85.Xd
Integrative biophysics, 87.18.Nq
Integrodifferential equations, 02.60.Nm
   in mathematical aspects of biological physics, 87.10.Ed
Interatomic distances and angles, 33.15.Dj
Interatomic potentials and forces, 34.20.Cf
Intercalation compounds, 71.20.Tx
Interconnects
   electrical, 84.32.Dd
   integrated electronics, 85.40.Ls
   integrated optics, 42.82.Ds
   optical, 42.79.Ta
Interdiffusion, chemical, 66.30.Ny
Interdisciplinary physics, see section 89
   new topics in, 89.90.+n
```

```
Interfaces
   electronic transport, 73.40.-c
   electron states, 73.20.-r
   gas-liquid, 68.03.-g
   liquid-liquid, 68.05.-n
   liquid-solid, 68.08.-p
   magnetic properties of, 75.70.Cn
   microscopy of, 68.37.-d
   solid-solid, 68.35.-p
   spin polarized transport through, 72.25.Mk
   structure and roughness of, 68.35.Ct
   thermodynamic properties of, 05.70.Np, 68.35.Md
Interfacial flows
   general, 47.55.N-
   liquid bridges, 47.55.nk
   rheology, 83.50.Lh
   spreading films, 47.55.nd
Interference, optical, 42.25.Hz
Interferometers, 07.60.Ly
Interferometry
   in astronomy, 95.55.Br, 95.75.Kk
   atomic, 03.75.Dg
   holographic, 42.40.Kw
   neutron, 03.75.Dg
   nonclassical, 42.50.St
   phase-shifting, 42.87.Bg
Intergalactic matter, 98.62.Ra
Intermediate bosons, decays of, 13.38.-b
Intermediate-valence solids
   diamagnetism and paramagnetism of, 75.20.Hr
   electron states of, 71.28.+d
   magnetic ordering of, 75.30.Mb
Intermetallic compounds, electronic structure of, 71.20.Lp
Intermolecular potentials and forces, 34.20.Gj
Internal conversion, nuclei, 23.20.Nx
Internal friction
   evidence of dislocations by, 61.72.Hh
   mechanical properties of solids, 62.40.+i
International laboratory facilities, 01.52.+r
International programs, geophysics, 93.55.+z
Internet, *43.10.Pr, 89.20.Hh
Interplanetary dust and gas, 96.50.Dj
```

```
Interplanetary space
   cosmic rays, 96.50.S-
   driver gases and magnetic clouds, 96.50.Uv
   energetic particles, 96.50.Vg
   neutral particles, 96.50.Zc
   pickup ions, 96.50.Ya
   solar wind plasma, 96.50.Ci
Interpolation methods, 02.60.Ed
Interstellar matter
   external galaxies, 98.58.-w
   Milky Way, 98.38.-j
Interstitials, 61.72.jj
Intracluster matter (galaxy clusters), 98.65.Hb
Intramolecular dynamics, 33.15.Hp
Inverse photoemission spectroscopy, 78.70.-g
Inverse problems, 02.30.Zz
   acoustical, *43.60.Pt
Inversion layers, 73.20.-r, 73.40.-c
Inviscid flows, 47.15.K-
Inviscid instability, 47.20.Cq
lo, 96.30.lb
Ion-acoustic waves (plasma), 52.35.Fp, 52.35.Qz
Ion beam-assisted deposition, 81.15.Jj
Ion beam epitaxy, 81.15.Hi
Ion beam lithography, 85.40.Hp
Ion beams
   negative, 41.75.Cn
   positive, 41.75.Ak
Ion channeling
   crystals, 61.85.+p
   in subcellular transport processes, 87.16.Vy
Ion-cyclotron resonance plasma heating, 52.50.Qt
Ion-cyclotron waves (plasma), 52.35.Hr, 52.35.Qz
Ion emission
   by liquids and solids, general and overall aspects of, 79.00.00
   new topics in, 79.90.+b
   secondary, 79.20.Rf
Ion exchange
   biological systems, 82.39.Wj
   chromatography, 82.80.Bg
   resins, 83.80.-k
Ionic conduction
```

```
in liquids, 66.10.Ed
   nonmetals, 66.30.H-
   solids, 66.30.Dn
Ionic interactions, atmospheric, 92.60.Ls
Ion implantation
   germanium and silicon, 61.72.uf
   III-V and II-VI semiconductors, 61.72.uj
   plasma-based, 52.77.Dq
   thin films, 68.55.Ln
   VLSI technology, 85.40.Ry
Ionization
   of atoms
     by atom, molecule, and ion impact, 34.50.Fa
     by electron impact, 34.80.Dp
   field, 79.70.+q
   of molecules
     by atom, molecule, and ion impact, 34.50.Gb
     by electron impact, 34.80.Gs
   in photochemistry, 82.50.-m
   in plasma, 52.25.Jm
Ionization chambers, 29.40.Cs
Ionization potentials
   atoms, 32.10.Hq
   molecules, 33.15.Ry
lonizing radiations
   effects on biological systems, 87.53.-j
Ion microscopes, 07.78.+s
   in structure determination, 68.37.Vj
Ion-molecule collisions, 34.50.-s
Ion-molecule reactions, 82.30.Fi
Ionoluminescence, 78.60.Hk
Ion optics, 41.85.-p
Ionosphere
   comets, *96.25.J-, 96.25.Jz
   Earth, 94.20.-y
     configuration, 94.20.D-
     disturbances, 94.20.Vv
     ionosphere/atmosphere interactions, 94.20.wg
     ionosphere/magnetosphere interactions, 94.20.wh
     modeling and forecasting, 94.20.Cf
     wave/particle interactions, 94.20.wj
   fluid planets, 96.15.Hy, *96.15.hk
```

```
instrumentation for, 94.80.+g
   solid surface planets, 96.12.Jt, *96.12.ji
lon plating, 81.15.Jj
Ion propulsion, 52.75.Di
Ion rings (magnetic confinement), 52.55.Lf
lons
   atomic
     electronic structure (see 31)
      photodetachment, 32.80.Gc
     photoionization, 32.80.Fb
      properties of, 32.10.-f
   in cavities, 37.30.+i
   molecular
     electronic structure (see 31)
      properties of, 33.15.-e
   surface neutralization, 34.35.+a
Ion scattering, 34.50.-s
   in structure determination, 61.05.Np
   from surfaces, 34.35.+a, 68.49.Sf, 79.20.Rf
Ion sources, 07.77.Ka
   in nuclear physics, 29.25.Lg, 29.25.Ni
Ion spectrometers, 07.81.+a
Ion-surface impact, 34.35.+a, 79.20.Rf
Ion traps, 37.10.Ty
Iron and its alloys, ferromagnetism of, 75.50.Bb
Irradiation effects
   on instruments, 07.89.+b
   on optical devices, 42.88.+h
   in solids, 61.80.-x
Irreversible thermodynamics, 05.70.Ln
Irrigation, 92.40.Xx
Ising model
   lattice theory, 05.50.+q
   magnetic ordering, 75.10.Hk
Islands, geographical regions, 93.30.Kh
Isobaric analog resonances, 24.30.Gd
Isobaric spin, 21.10.Hw
Isomer decay (radioactive decay), 23.35.+g
Isomerism
   of biomolecules, 87.15.hp
   macromolecules and polymer molecules, 36.20.Ey
   rotational, 33.15.Hp
```

```
Isomerization reactions, 82.30.Qt
Isostasy
   crustal movements, 91.45.Ga
   in marine geology, 91.50.Kx
Isotope effects
   atoms and molecules, 31.30.Gs
   chemical reactions, 82.20.Tr
Isotopes, 32.10.Bi
   abundances and evolution (astronomy), 98.80.Ft
   of hydrogen, 67.63.-r, 67.80.F-
   radioactive, sources of, 29.25.Rm
   separation and enrichment, 28.60.+s
Isotopic dating (geochronology), *91.80.Hj
Jahn-Teller effect
   in atoms and molecules, 31.30.-i
   in condensed matter, 71.70.Ej
Jets
   galactic, 98.62.Nx
   interstellar matter, 98.38.Fs, 98.58.Fd
   in laminar flows, 47.15.Uv
   in large-Q<sup>2</sup> scattering, 13.87.-a
   oceanic, 92.10.Ty
   through nozzles, 47.60.Kz
   in turbulent flows, 47.27.wg
Joining, 81.20.Vj
Josephson devices, 85.25.Cp
Josephson effect
   quantum mechanics, 03.75.Lm
   tunneling phenomena (superconductivity), 74.50.+r
Josephson junction arrays, 74.81.Fa
Joule-Thomson effect, 51.30.+i
Jovian satellites, 96.30.Kf
Junction breakdown devices, 85.30.Mn
Junction diodes, 85.30.Kk
Jupiter, 96.30.Kf
   Jovian satellites, 96.30.L-
Jurassic period, *91.70.de
Kaluza-Klein theory (higher-dimensional gravity), 04.50.Cd
Kaluza-Klein excitations (particle physics), 14.80.Rt
Kaon-baryon interactions, 13.75.Jz
Kaon decays
   hadronic, 13.25.Es
```

```
leptonic and semileptonic, 13.20.Eb
Kaon-induced reactions and scattering, 25.80.Nv
KDP crystals (dielectric materials), 77.84.Fa
Kelvin-Helmholtz instability (fluid flow), 47.20.Ft
Kelvin waves (ocean waves), *92.10.hh
Kerr effect
   atoms and molecules, 33.57.+c
   condensed matter, 78.20.Jq
   nonlinear optics, 42.65.Hw
Kinematics
   of deformation and flow, 83.10.Bb
   of particles, 45.50.-j, 83.10.Pp
   of rigid bodies, 45.40.-f
   rotational, 45.40.Bb
   translational, 45.40.Aa
Kinetic modes (magnetic confinement), 52.55.Tn
Kinetic theory
   gases, 47.45.Ab, 51.10.+y
   plasma, 52.25.Dg
   statistical mechanics, 05.20.Dd
Klystrons, 84.40.Fe
Knight shift, 76.60.Cq
Knot theory, 02.10.Kn
Knudsen flow, 47.45.-n
Kobayashi-Maskawa matrix, 12.15.Hh
Kondo effect
   diamagnetism and paramagnetism, 75.20.Hr
   electronic conduction in metals and alloys, 72.15.Qm
   electronic transport, theory of, 72.10.Fk
Kondo lattice, 75.30.Mb
Kosterlitz-Thouless transition
   liquid crystals, 64.70.mf
   magnetic systems, 75.30.Kz
Krönig-Penney model, 71.15.Ap
Kuiper belt, 96.30.Xa
Laboratory
   computer use in, 01.50.Lc
   course design, 01.50.Qb
   experiments and apparatus, 01.50.Pa
   procedures, 06.60.-c
Laboratory facilities, national and international, 01.52.+r
Laboratory-scale study of astrophysical-plasmas, 52.72.+v
```

```
Lagrangian mechanics, 45.20.Jj
Lagrangians
   chiral (quark models), 12.39.Fe
   field theory, 11.10.Ef
   general relativity, 04.20.Fy
Lakes, 92.40.Qk, *92.40.qj
Lamallipods, 87.16.Qp
Lamb shift, 31.30.jf
   in muonic hydrogen and deuterium, 31.30.jr
Lamellae, 82.70.Uv
Laminar flows, 47.15.-x, 83.50.-v
   inviscid, 47.15.K-
Laminar to turbulent transition, 47.15.Fe, 47.27.Cn
Landau levels, 71.70.Di
Landslides, 92.40.Ha
Land transportation, 89.40.Bb
Langevin method, 05.10.Gg
Langmuir-Blodgett films
   deposition of, 81.15.Lm
   on liquids, 68.18.-g
   liquid thin film structure, 68.18.Fg
   phase transitions in, 68.18.Jk
   on solids, 68.47.Pe
Laplace equation, 41.20.Cv
Larynx, 43.70.Gr
Laser ablation
   laser-plasma interactions, 52.38.Mf
   of solids, 79.20.Eb
Laser beam annealing, 61.80.Ba
Laser beam machining, 42.62.Cf
Laser deposition, 81.15.Fg
   nanofabrication, 81.16.Mk
Laser diodes, 42.55.Px
Laser Doppler velocimeters, 42.79.Qx
Laser-driven acceleration, 41.75.Jv
Laser imaging, medical, 42.62.Be, 87.63.lt
Laser impact phenomena on surfaces, 79.20.Ds
   laser ablation, 79.20.Eb
   multiphoton absorption, 79.20.Ws
Laser inertial confinement, 52.57.-z
Laser materials, 42.70.Hj
Laser-modified scattering
```

```
of atoms and molecules, 34.50.Rk
   of electrons, 34.80.Qb
Laser operation
   continuous, 42.60.Pk
   long-pulse, 42.60.Rn
Laser-plasma interactions, 52.38.-r
Laser-produced plasma, 52.50.Jm
Laser radiation
   characteristics, 42.60.Jf
   propagation (atmospheric optics), 42.68.-w
   surface irradiation effects, 61.80.Ba
Laser range finders, 06.30.Gv, 42.79.Qx
Lasers, 42.55.-f
   applications of, 42.62.-b
   general theory of, 42.55.Ah
   optical systems for, 42.60.-v
Laser spectroscopy, 42.62.Fi
Laser targets (inertial confinement), 52.57.Bc
Laser velocimeters, 06.30.Gv, 42.79.Qx
Latent heat, 05.70.Ce, 65.40.G-
Latex rubber, 83.80.Va
Lattice dynamics
   crystals (see 63)
   of solid helium-3, 67.80.de
Lattice fermion models, 71.10.Fd
Lattice gas (fluid dynamics), 47.11.Qr
Lattice gauge theory, 11.15.Ha
Lattice models
   in biological physics, 87.10.Hk, 87.16.aj
Lattice QCD calculations, 12.38.Gc
Lattice theory and statistics, 05.50.+q
Lattice vibrations
   statistical mechanics of, 63.70.+h
Lava, 91.40.Hw
Laves phases (superconductivity), 74.70.Ad
Layered structures
   phonons in, 63.22.Np
   semiconductors, III-V
     electrical properties of, 73.61.Ey
     optical properties of, 78.66.Fd
   semiconductors, II-VI
     electrical properties of, 73.61.Ga
```

```
optical properties of, 78.66.Hf
Leak detectors (vacuum technology), 07.30.Hd
Learning
   in education, 01.40.Ha
   neuroscience of, 87.19.lv
Least square approximation, 02.60.Ed
Lectures
   announcements, 01.10.Fv
   publications, 01.30.Bb
LEED
   in structure determination, 61.05.jh
Length measurement, 06.30.Bp
Lenses
   acoustical, *43.58.Ls
   electrostatic, 41.85.Ne
   gravitational, 95.30.Sf
   optical design of, 42.15.Eq
   in optical systems, 42.79.Bh
Lepton-lepton interactions, 13.66.-a
Lepton number, 11.30.Fs
Leptoquarks, 14.80.Sv
Leptons
   beta decay, 23.40.-s
   charged heavy leptons, 14.60.Hi
   decays, 13.35.-r
   electrons, 14.60.Cd
   in decays
     of baryons, 13.30.Ce
     of mesons, 13.20.-v
   -induced nuclear reactions, 25.30.-c
   interactions with hadrons, 13.60.-r
   masses and mixing, 12.15.Ff
   muons, 14.60.Ef
   neutrinos, 14.60.Lm, 14.60.St
   positrons, 14.60.Cd
   production
     in electron-positron interactions, 13.66.De
     in hadronic interactions, 13.85.Qk
     in relativistic heavy-ion collisions, 25.75.Cj
   properties of, 14.60.-z
   taus, 14.60.Fg
Level crossing
```

```
in atoms, 32.80.Xx
   in molecules, 33.80.Be
Level splitting
   in atoms, 32.60.+i
   in molecules, 33.57.+c
   in solids, 71.70.-d
Levitation, acoustic, *43.25.Uv
Levitation devices
   magnetic, 85.70.Rp
   superconducting, 84.71.Ba
Levy flights, 05.40.Fb
LIDAR, 42.68.Wt, 42.79.Qx
Lie algebra, 02.20.Sv
Lie groups, 02.20.Tw
Lifetimes
   atomic spectra, 32.70.Cs
   molecular spectra, 33.70.Ca
   nuclear energy levels, 21.10.Tg
Ligand fields, 71.70.Ch
Light
   effects on biological systems, 87.50.W-
   interaction with matter, 42.50.Ct
   mechanical effects on atoms and molecules, 37.10.Vz, 42.50.Wk
   zodiacal, 96.50.Dj
Light absorption and transmission, 42.25.Bs
   effects of atomic coherence on, 42.50.Gy
Light-emitting diodes, 85.60.Jb
Lightning, 52.80.Mg, 92.60.Pw
Light mesons, 14.40.Be
Light pressure, 42.50.Wk
Light quarks, 14.65.Bt
Light scattering
   in atmospheric optics, 42.68.Mj, 92.60.Ta
   in condensed matter, 78.35.+c
   in plasma, 52.25.Os
   wave optics, 42.25.Fx
Light-sensitive materials, 42.70.Gi
Lighting
   day lighting/natural lighting of buildings, 88.40.mx
   energy use in, 88.05.Tg
   outdoor solar lights, 88.40.my
Light sources, 42.72.-g
```

```
Limiters, electronic, 84.30.Qi
Limnology, 92.40.Qk, *92.40.qj
Linear accelerators, 29.20.Ej
Line shape and width, 32.70.Jz, 33.70.Jg
Lipids, 87.14.Cc
Liquid crystals
   anchoring, 61.30.Hn
   defects in, 61.30.Jf
   dielectric properties of, 77.84.Nh
   displays, 42.79.Kr
   flow of, 47.57.Lj
   glass transitions in, 64.70.pp
   microconfined, 61.30.Pq
   in optical devices, 42.79.Kr
   optical materials, 42.70.Df
   optical properties of, 78.15.+e
   orientation of, 61.30.Gd
   phase transitions in, 64.70.M-
   polymer, 61.30.Vx
   polymer dispersed, 61.30.Pq
   rheology of, 83.80.Xz
   structure of, 61.30.Cz, 61.30.Eb
Liquid drops, 47.55.D-
Liquid helium. see 67
Liquid-liquid transitions, 64.70.Ja
Liquid metals and alloys
   electrical and thermal conduction, 72.15.Cz
   electronic structure, 71.22.+i
   structure of, 61.25.Mv
Liquid-phase epitaxy, 81.15.Lm
Liquids
   acoustical properties, 62.60.+v
   associated, 61.20.Qg
   dielectric properties, 77.84.Nh, 77.22.-d
   diffusion in, 66.10.C-
   diffusive momentum transport in, 66.20.Gd
   electric discharge in, 52.80.Wq
   glass transitions in, 64.70.pm
   heat capacities, 65.20.Jk
   high pressure effects, 62.50.-p
   infrared spectra, 78.30.C-
      inorganic liquids, 78.30.cc
```

```
organic liquids, 78.30.cb
     solutions and ionic liquids, 78.30.cd
   ionic conduction in, 66.10.Ed
   magnetic, 75.50.Mm
   mass diffusion in, 66.10.cg
   mechanical properties, 62.10.+s
   metallic
     thermal conduction in, 72.15.Cz
   molecular
     structure of, 61.25.Em
   noble gas
     structure of, 61.25.Bi
   nonmetallic
     thermal conduction in, 66.25.+g
   osmosis in, 66.10.cg
   photoluminescence, 78.55.Bq
   Raman spectra, 78.30.C-
   structure of, 61.20.-p, 61.25.-f
   ultraviolet spectra, 78.40.Dw
   viscosity of, 66.20.-d
   visible spectra, 78.40.Dw
Liquid semiconductors
   conductivity, 72.80.Ph
   electron density of states, 71.22.+i
Liquid-solid transitions, 64.70.D-
Liquid thin films, 68.15.+e, 68.18.-g
Liquid-vapor transitions, 64.70.F-
Lithography
   in integrated electronics, 85.40.Hp
   in integrated optics, 42.82.Cr
   nanolithography, 81.16.Nd
   subwavelength, 42.50.St
Lithosphere
   rheology of, 91.32.De
   seismology of, 91.30.Wx
Local-density approximation
   atomic and molecular physics, 31.15.E-
   condensed matter, 71.15.Mb
Local group, 98.56.-p
Localization
   conductivity in metals and alloys, 72.15.Rn
   disordered structures, 71.23.-k, 71.55.Jv
```

```
mobility edges, 72.20.Ee
   sound sources, *43.66.Qp
   surface and interface states, 73.20.Fz
   weak, 72.15.Rn, 73.20.Fz
Localized modes, 63.20.Pw
Locomotion (motor systems), 87.19.lu
Logic, mathematical, 02.10.Ab
Logic devices
   optical, 42.79.Ta
   superconducting, 85.25.Hv
Lorentz invariance, 11.30.Cp
Lorentz transformation, 03.30.+p
Loudspeakers, *43.38.Ja
Low-dimensional structures
   devices, 85.35.Be
   electrical properties, 73.63.-b
   electron states and collective excitations in, 73.21.-b
   optical properties, 78.67.-n
   phonons in, 63.22.-m
   structure and nonelectronic properties of, 68.65.-k
   superconducting, 74.78.-w
Low energy electron diffraction (LEED), 61.05.jh
Low energy electron microscopy, 68.37.Nq
Low mass nuclear reactions, 25.10.+s
Low temperature techniques, 07.20.Mc
LSI, 85.40.-e
Lubrication
   effects of materials treatment, 81.40.Pq
   flows, 47.85.mf
   rheology, 83.50.-v
Luminescence
   of atoms, 32.50.+d
   of biomolecules, 87.15.mq
   cathodoluminescence, 78.60.Hk
   chemiluminescence, 78.60.Ps
   electroluminescence, 78.60.Fi
   ionoluminescence, 78.60.Hk
   optically stimulated, 78.60.Lc
   sonoluminescence, 78.60.Mg
   thermoluminescence, 78.60.Kn
   triboluminescence, 78.60.Mq
   of molecules, 33.50.-j
```

```
photoluminescence
           of alkali halides, 78.55.Fv
           of amorphous and disordered materials, 78.55.Qr
           of glasses, 78.55.Qr
of inorganic solids (excluding compound semiconductors and alkali halides), 78.55.Hx
           of liquids, 78.55.Bq
           of organic solids, 78.55.Kz
           of porous materials, 78.55.Mb
           of semiconductors
             elemental semiconductors, 78.55.Ap
             II-VI semiconductors, 78.55.Et
             III-V semiconductors, 78.55.Cr
     Luminosity
         galaxies, 98.62.Qz, 98.62.Ve
         stars, 97.10.Ri, 97.10.Xq
     Lunar probes, 95.55.Pe
     Lungs, hemodynamics of, 87.19.ug
     Luttinger liquid, 71.10.Pm
         superconductivity, 74.20.Mn
     Lyman forest (quasars), 98.62.Ra
     Lyotropic phases, 61.30.St
     Machining
         materials processing, 81.20.Wk
         micromachining
           biomedical engineering, 87.85.Va
           microelectronics, 85.40.Hp
         workshop techniques, 06.60.Vz
     Mach number, 47.40.-x
     Macromolecules
         biological, 87.15.-v
         liquid solutions, properties of, 87.15.N-
         liquid solutions, structure of, 61.25.H-
         properties of, 36.20.-r
     Macroscopic quantum tunneling (magnetic systems), 75.45.+j
     Magellanic stream, 98.56.Tj
     Magma
         migration, 91.40.Jk
         rheology, 83.80.Nb
     Magnesium diboride, superconductivity of, 74.70.Ad
     Magnetic aftereffects, 75.60.Lr
     Magnetic anisotropy, 75.30.Gw
     Magnetic annealing, 75.60.Nt
     Magnetic bubbles, 75.70.Kw
```

```
Magnetic circular dichroism
   in biophysics, 87.64.ku
   in condensed matter, 78.20.Ls
   of molecules, 33.55.+b
Magnetic confinement and equilibrium, 52.55.-s
Magnetic cooling
   cryogenics, 07.20.Mc
   magnetocaloric effect, 75.30.Sg
Magnetic coordinate systems, 94.30.Bg
Magnetic cores, 85.70.-w
Magnetic devices, 85.70.-w
   spin polarized transport devices, 85.75.-d
Magnetic domains, 75.60.Ch
   in thin films, 75.70.Kw
   in nanoparticles, 75.75.Fk
Magnetic fields
   astronomical observations of, 95.85.Sz
   of comets, 96.25.Ln
   effects on biological systems, 87.50.C-
   effects on material flow, 83.60.Np
   in electromagnetism, 41.20.-q
   of external galaxies, 98.62.En
   generation of, 07.55.Db
   interplanetary, 96.50.Bh
   lunar, 96.20.Jz
   magnetospheric, 94.30.Ms
   measurement of, 07.55.Ge
   of Milky Way, 98.35.Eg
   planetary
     fluid planets, 96.15.Gh
     solid surface planets, 96.12.Hg
   solar, 96.60.Hv
   stellar, 97.10.Ld
   terrestrial, 91.25.-r
Magnetic films
   devices, 85.70.Kh
   properties of, 75.70.-i
Magnetic fluids, 47.65.Cb
Magnetic force microscopy, 68.37.Rt
   instrumentation of, 07.79.Pk
Magnetic heads, 85.70.Kh
Magnetic hysteresis, 75.60.-d, 75.60.Ch, 75.60.Nt
```

```
Magnetic impurity interactions, 75.30.Hx
Magnetic induction, 41.20.Gz
Magnetic instruments, 07.55.-w
Magnetic lenses, 41.85.Lc
Magnetic levitation devices, 85.70.Rp
   superconducting magnets, 84.71.Ba
Magnetic liquids, 47.65.Cb, 75.50.Mm
Magnetic logic, reprogrammable, 85.75.Ff
Magnetic materials, 75.50.-y
   amorphous magnetic materials, 75.50.Kj
   antiferromagnetic materials, 75.50.Ee
   ferrimagnetic materials, 75.50.Gg
   ferromagnetic materials
     Fe and its alloys, 75.50.Bb
     other ferromagnetic metals and alloys, 75.50.Cc
     nonmetallic ferromagnetic materials, 75.50.Dd
   high coercivity materials, 75.50.Vv
   magnetic liquids, 75.50.Mm
   magnetic recording materials, 75.50.Ss
   magnetic semiconductors, 75.50.Pp
   magnetotransport materials, 75.47.-m
     magnetic oxides, 75.47.Lx
     metals and alloys, 75.47.Np
   multiferroics, 75.85.+t
   nanocrystalline magnetic materials, 75.50.Tt
   new topics in, 75.90.+w
Magnetic memory
   using giant magnetoresistance, 85.75.Bb
   using magnetic tunnel junctions, 85.75.Dd
Magnetic mirrors, 52.55.Jd
Magnetic moments
   of atoms, 32.10.Dk
   of hadrons, 13.40.Em
   local, in compounds and alloys, 75.20.Hr
   magnetometers for, 07.55.Jg
   of molecules, 33.15.Kr
Magnetic monopoles, 14.80.Hv
Magnetic multilayers, 75.70.Cn
Magnetic nanoparticles
   domain structures in, 75.75.Fk
   dynamics of, 75.75.Jn
   electronic structure of, 75.75.Lf
```

```
Magnetic ordering
   general theory and models of, 75.10.-b
      band and itinerant models, 75.10.Lp
     classical spin models, 75.10.Hk
     crystal field theory; spin Hamiltonians, 75.10.Dg
     quantized spin models, 75.10.Jm
      quantum spin frustration, 75.10.Jm
      quantum spin liquids, 75.10.Kt
      spin chain models, 75.10.Pq
      spin-glass models, 75.10.Nr
     valence bond phases, 75.10.Kt
   spin arrangements in, 75.25.-j
   orbital, charge and other orders in, 75.25.Dk
Magnetic oxides (magnetotransport materials), 75.47.Lx
Magnetic permeability measurement, 07.55.-w
Magnetic phase transitions, 75.30.Kz
Magnetic phenomena in gases, 51.60.+a
Magnetic properties
   of clusters, 36.40.Cg
   of gases, 51.60.+a
   of magnetically ordered materials, 75.30.-m
      exchange interactions, 75.30.Et
      magnetic anisotropy, 75.30.Gw
      magnetic impurity interactions, 75.30.Hx
      magnetic phase boundaries, 75.30.Kz
      magnetic susceptibility, 75.30.Cr
      magnetocaloric effect, 75.30.Sg
     saturation moments, 75.30.Cr
      spin cross over, 75.30.Wx
      spin-density waves, 75.30.Fv
      spin waves, 75.30.Ds
       dynamic critical point effects, 75.40.Gb
   materials treatment effects on, 81.40.Rs
   of nanostructures, 75.75.-c
     domain structure in nanoparticles, 75.75.Fk
     dynamics of magnetic nanoparticles, 75.75.Jn
     electronic structure of magnetic nanoparticles, 75.75.Lf
   new topics in, 75.90.+w
   of rocks and minerals, 91.60.Pn
   of solid <sup>3</sup>He, 67.80.dk
   of superconductors, 74.25.Ha
   of superfluid <sup>3</sup>He, 67.30.er
```

```
of thin films, surfaces, and interfaces 75.70.-i
     domain structure, 75.70.Kw
     interfaces, 75.70.Cn
     monolayers, 75.70.Ak
     spin-orbit effects, 75.70.Tj
     surfaces (surface magnetism), 75.70.Rf
Magnetic propulsion devices, 85.70.Rp
Magnetic reconnection
   in magnetosphere, 94.30.cp
   in plasmas, 52.35.Vd
   in solar physics, 96.60.lv
Magnetic recording devices, 85.70.Kh, 85.70.Li
   for sound recording, *43.38.Qg
Magnetic recording materials, 75.50.Ss
Magnetic resonance imaging (MRI)
   in condensed matter, 76.60.Pc
   instrumentation for, 87.61.Ff
   in medical physics, 87.61.-c
   in neuroscience, 87.19.lf
   rheological applications of, 83.85.Fg
Magnetic resonance spectra
   of atoms, 32.30.Dx
   in condensed matter, 76.30.-v, 76.60.-k, 76.70.-r
   of molecules, 33.25.+k
Magnetic resonance spectrometers, 07.57.Pt
Magnetic semiconductors
   conductivity of, 72.20.-i
   magnetic properties of, 75.50.Pp
Magnetic shielding, 41.20.Gz
   in instruments, 07.55.Nk
Magnetic storms, 94.30.Lr
Magnetic susceptibility
   magnetically ordered materials, 75.30.Cr
   magnetometers for, 07.55.Jg
   of molecules, 33.15.Kr
Magnetic tail (magnetosphere), 94.30.cl
Magnetic transitions (classical and quantum), 75.30.Kz
Magnetic traps, 52.55.Jd, 52.55.Lf
Magnetic variables measurement, 07.55.-w
Magnetization
   dynamics of, 75.78.-n
   in magnetic materials, 75.60.Ej
```

```
magnetometers for, 07.55.Jg
   reversal mechanisms, 75.60.Jk
   of superconductors, 74.25.Ha
   dynamics, 75.78.-n
     dynamics of domain structures, 75.78.Fg
     micromagnetic simulations, 75.78.Cd
     ultrafast magnetization dynamics, 75.78.Jp
   reversal, 75.60.Jk
Magnetized target fusion, 52.55.Lf
Magnetoacoustic devices, 85.70.Ec
Magnetoacoustic effects, *43.35.Rw
   bulk matter, 72.55.+s
   thin films, 73.50.Rb
Magnetoactive discharges, 52.80.Sm
Magnetocaloric effect, 75.30.Sg
Magnetoelastic effects, 75.80.+q
Magnetoelasticity (continuum mechanics), 46.25.Hf
Magnetoelectric devices, 85.80.Jm
Magnetoelectric effects, 75.85.+t
Magnetoelectric films, 77.55.Nv
Magnetoelectronics, 85.75.-d
   spin transport effects, 75.76.+j
Magnetoexcitons, 71.35.Ji
Magnetohydrodynamic energy conversion, 52.75.Fk, 84.60.Lw
Magnetohydrodynamics
   in astrophysics, 95.30.Qd
   in fluids, 47.35.Tv, 47.65.-d
   in plasma dynamics and flow, 52.30.Cv
   in plasma simulation, 52.65.Kj
Magnetomechanical effects, 75.80.+q
Magnetometers, 07.55.Ge, 07.55.Jg
   superconducting, 85.25.Dq
Magneto-optical devices, 85.70.Sq
Magneto-optical effects, 78.20.Ls
Magnetopause, 94.30.ch
Magnetoresistance
   colossal, 75.47.Gk
   giant, 75.47.De
     in magnetic memory, 85.75.Bb
   of metals and alloys, 72.15.Gd
   in quantum Hall effects, 73.43.Qt
   of semiconductors, 72.20.My
```

```
of thin films, 73.50.Jt
Magnetorheological fluids, 83.80.Gv
Magnetosheath, 94.30.cj
Magnetosphere
   Earth
     configuration, 94.30.C-
         magnetospheric cusp, 94.30.cg
         plasma sheet, 94.30.ct
     interactions with ionosphere, 94.20.wh, 94.30.Va, *94.30.vb
     magnetic reconnection, 94.30.cp
     MHD waves, 94.30.cq
     ring currents in, 94.30.Kq
Magnetospheric cusp, 94.30.cg
Magnetostatic devices, 85.70.Ec
Magnetostatics, 41.20.Gz
Magnetostratigraphy, 91.25.Ph
Magnetostriction, 75.80.+q
Magnetostrictive devices, 85.70.Ec
Magnetotelluric effects (geomagnetism), 91.25.Qi
Magnetothermal devices, 85.80.Lp
Magnetotransport
   materials for, 75.47.-m
     magnetic oxides, 75.47.Lx
     metals and alloys, 75.47.Np
   phenomena, 75.47.-m
     colossal magnetoresistance, 75.47.Gk
     giant magnetoresistance, 75.47.De
Magnetrons, 84.40.Fe
Magnets, 07.55.Db
   molecular magnets (magnetic materials), 75.50.Xx
   particle beam focusing, 41.85.Lc
   permanent magnets (magnetic materials), 75.50.Ww
   superconducting, 84.71.Ba
Magnons, 75.30.Ds
   photon-magnon interactions, 71.36.+c
   scattering by (electronic transport), 72.10.Di
Majorana-Weyl fields, 04.50.-h
Majorons, 14.80.Va
Malleability, 62.20.fk
Mammography
   in computer-aided diagnosis, 87.57.rh
   in x-ray imaging, 87.59.E-
```

```
digital mammography, 87.59.ej
     film mammography, 87.59.eg
Manganites (magnetotransport materials), 75.47.Lx
Manifolds, 02.40.Sf, 02.40.Tt
Manipulators, 06.60.Sx
Mantle, Earth's, 91.35.Gf
   rheology of, 91.32.Gh
   seismology of, 91.30.Uv
Many-body theory
   in nuclear reaction models, 24.10.Cn
   relativistic scattering theory, 11.80.Jy
Many-electron systems, theories of, 71.10.-w
Map lattices, coupled, 05.45.Ra
Marangoni convection (fluid dynamics), 47.55.pf
Marine chemistry, *92.20.cf, *92.20.cg
Marine geology, 91.50.-r
   bathymetry, seafloor topology, 91.50.Ga
   beach and coastal processes, 91.50.Cw
   continental shelf processes, 91.50.Bd
   gas and hydrate systems, 91.50.Hc
   littoral processes, 91.50.Nc
   seafloor morphology, 91.50.Ey
Marine life, acoustical detection of, *43.30.Sf
Marine magnetics, 91.50.lv
Marine organisms
   bacteria, 92.20.Jt, *92.20.jb
   plankton, 92.20.Jt, *92.20.jf, *92.20.jh
Marine pollution, 92.20.Ny
Marine sediments, 91.50.Jc
Markets for biofuels, 88.20.T-
   chemicals, 88.20.tk
   combined heat and power, 88.20.tf
   heat, 88.20.td
   transportation fuels, 88.20.th
Markov processes, 02.50.Ga
Mars, 96.30.Gc
   Martian satellites, 96.30.Hf
Martensitic transformations, 81.30.Kf
Masers, 84.40.lk
   circumstellar, 97.10.Fy
   interstellar
     in external galaxies, 98.58.Ec
```

```
in Milky Way, 98.38.Er
Masking
   psychological acoustics, *43.66.Dc
Masks
   in integrated electronics, 85.40.Hp
   in integrated optics, 42.82.Cr
Mass
   galactic, 98.35.Ce, 98.62.Ck
   measurement of, 06.30.Dr
   nuclear, 21.10.Dr, 21.10.Gv
   solar, 96.60.Bn
   stellar, 97.10.Nf, 97.10.Xq
Mass differences, electromagnetic, 13.40.Dk
Mass diffusion
   in liquids, 66.10.cg
Mass ejection (corona), 96.60.ph
Mass spectra, 32.10.Bi, 33.15.Ta
Mass spectrometers, 07.75.+h
Mass spectrometry
   Fourier transform, 82.80.Nj
   ion cyclotron resonance, 82.80.Qx
   SIMS, 68.49.Sf, 82.80.Ms
   time-of-flight, 82.80.Rt
Mass-to-light ratio (galaxies), 98.62.Ve
Material flow, 83.50.-v
   rock mechanics, 91.60.Ba
Materials synthesis and processing
   material processing flows, 47.85.M-, 83.50.Uv
    methods of, 81.20.-n
     aerosols in materials synthesis, 81.20.Rg
     chemical synthesis, 81.20.Ka
     forming, molding, extrusion, 81.20.Hy, 83.50.Uv
     joining; welding, 81.20.Vj
     micro- and nanofabrication, 81.16.-c
       atom manipulation, 81.16.Ta
       catalytic methods, 81.16.Hc
       chemical synthesis, 81.16.Be
       laser-assisted deposition, 81.16.Mk
       micro- and nano-oxidation, 81.16.Pr
       micro- and nanolithography, 81.16.Nd
       self-assembly, 81.16.Dn
       supramolecular assembly, 81.16.Fg
```

```
machining, milling, 81.20.Wk
     purification, 81.20.Ym
     sol-gel processing, 81.20.Fw
Materials science (see section 81)
   new topics in, 81.90.+c
Materials
   specific materials, 81.05.-t
     carbon/carbon-based materials, 81.05.U-
       diamond/nanocarbon composites, 81.05.uj
       diamond, 81.05.ug
       fullerenes, 81.05.ub
       graphene, 81.05.ue
       graphite, 81.05.uf
     ceramics, 81.05.Je
       ceramic composites, 81.05.Mh
     composite materials
       ceramic composites
       diamond/nanocarbon composites, 81.05.uj
       glass-based composites, 81.05.Pj
       metal-based composites, 81.05.Ni
       polymer-based composites, 81.05.Qk
       refractory composites, 81.05.Mh
     glasses, 81.05.Kf
     granular materials, 81.05.Rm
     metamaterials, 81.05.Xj, 78.67.Pt
     metals and alloys, 81.05.Bx
     nanoscale materials
       molecular nanostructures, 81.07.Nb
       nanocontacts, 81.07.Lk
       nanocrystalline materials, 81.07.Bc
       nanoelectromechanical systems, 81.07.0j
       nanopowders, 81.07.Wx
       nanowires, 81.07.Gf
       organic-inorganic hybrid nanostructures, 81.07.Pr
       quantum dots, 81.07.Ta
       quantum wells, 81.07.St
       quantum wires, 81.07.Vb
     new materials, theory, and design, 81.05.Zx
     organic and organometallic materials, 81.05.Lg
     polymers and plastics, 81.05.Lg
     porous materials, 81.05.Rm
     reinforced materials
```

```
fiber-, and platelet-reinforced (metal-based), 81.05.Ni
       polymers, 81.05.Qk
     refractories, 81.05.Je
       refractory composites, 81.05.Mh
     semiconductors
       amorphous semiconductors, 81.05.Gc
       elemental semiconductors, 81.05.Cy
       II-VI semiconductors, 81.05.Dz
       III-V semiconductors, 81.05.Ea
       semiconductors (excluding II-VI, III-V, elemental, and amorphous), 81.05.Hd
   effects on transition temperature (superconductivity), 74.62.Bf
Materials testing and analysis, 81.70.-q
Matrix theory, 02.10.Yn
Matter waves, 03.75.-b
Mean free path, electron
   in bulk matter, 72.15.Lh
   in thin films, 73.50.Gr
Measurements common to several branches of physics and astronomy, 06.30.-k
Measurement theory (quantum mechanics), 03.65.Ta
Measurement units and standards, 06.20.F-
Mechanical alloying, 81.20.Ev
Mechanical and micromechanical techniques
   biophysical techniques, 87.80.Ek
Mechanical contacts, 46.55.+d
Mechanical effects of light, 37.10.Vz, 42.50.Wk
Mechanical energy, 45.20.dg
Mechanical instability, 46.32.+x
Mechanical instruments, 07.10.-h
Mechanical properties
   beams, plates, and shells, 46.70.De
   biomolecules, 87.15.La
   deformation and flow, 83.50.-v
   of gases, 51.35.+a
   of liquids, 62.10.+s
   materials treatment effects on, 81.40.-z
   of nanoscale systems, 62.25.-g
   of rocks and minerals, 91.60.Ba, 91.60.Dc
   of solids, 62.20.-x
   of solid surfaces and interfaces, 68.35.Gy
   of superconductors, 74.25.Ld
   of thin films, 68.60.Bs
   of tissues and organs, 87.19.R-
```

```
Mechanical resonance, 62.40.+i
Mechanical systems, control of, 45.80.+r
Mechanical testing, 81.70.Bt
Mechanical variables measurement, 07.10.-h
Mechanical vibrations, 46.40.-f
Mechanical waves
   propagation of, 46.40.Cd
   resonance and damping of, 46.40.Ff
Mechanical work, 45.20.dg
Mechanics
   celestial, 45.50.Pk, 95.10.Ce
   continuum, 46, 83.10.Ff
   Lagrangian and Hamiltonian, 45.20.Jj
   Newtonian, 45.20.D-
   quantum, 03.65.-w
   quantum statistical, 05.30.-d
   statistical, 05.20.-y
   structural, 46.70.-p
Medical imaging, 87.57.-s
   bone densitometry, 87.63.St
   computed tomography, 87.57.Q-
     multislice, 87.57.qp
     single-slice, 87.57.qh
   computer-aided diagnosis, 87.57.R-
     mammography, 87.57.rh
   electrical impedance tomography, 87.63.Pn
   image analysis, 87.57.N-
     edge enhancement, 87.57.nt
     image reconstruction, 87.57.nf
     image registration, 87.57.nj
     segmentation, 87.57.nm
     smoothing techniques, 87.57.np
   image quality, 87.57.C-
     image contrast, 87.57.cj
     image distortion, 87.57.cp
     noise in, 87.57.cm
     spatial resolution, 87.57.cf
   magnetic resonance imaging, 87.61.-c
     anatomic imaging, 87.61.Jc
     clinical applications, 87.61.Tg
     flow imaging, 87.61.Np
     functional MRI, 87.19.lf, 87.61.Qr
```

```
instrumentation for, 87.61.Ff
     in neuroscience, 87.19.lf
     pulse sequences in, 87.61.Hk
     theory of, 87.61.Bj
   nuclear medicine imaging, 87.57.U-
     conventional imaging, 87.57.ue
     dosimetry in, 87.57.uq
     PET, 87.57.uk
     radiopharmaceuticals in, 87.57.uk
     SPECT, 87.57.uh
   optical, of neuronal activity, 87.19.lh
   thermography, 87.63.Hg
   ultrasonography, 87.63.D-
     Doppler imaging, 87.63.dk
     ultrasonographic imaging, 87.63.dh
   visual imaging, 87.63.L-
     image enhancement, 87.63.lm
     image perception, 87.63.lj
     laser imaging in, 87.63.lt
     transillumination in, 87.63.lp
   x-ray imaging, 87.59.-e
     angiography, 87.59.Dj
     fluoroscopy, 87.59.C-
     mammography, 87.59.E-
     x-ray radiography, 87.59.B-
MEG, in neuroscience, 87.19.le
Meissner effect, 74.25.Ha
Melting, 64.70.dj
Melts
   crystal growth from, 81.10.Fq
   film deposition from, 81.15.Lm
Melt-textured superconductors, 74.81.Bd
Membrane proteins, 87.14.ep
Membranes
   in electrochemistry, 82.45.Mp
   structural acoustics of, *43.40.Dx
   structural mechanics of, 46.70.Hg
   in subcellular structure, 87.16.D-
     assembly of, 87.16.dr
     domains and rafts, 87.16.dt
     dynamics and fluctuations, 87.16.dj
     mechanical properties and rheology of, 87.16.dm
```

```
structure of, 87.16.dt
     transport processes, 87.16.dp
Memory, neuroscience of, 87.19.lv
Memory devices
   magnetic, 85.70.-w, 85.75.-d
   optical, 42.79.Vb
   superconducting, 85.25.Hv
MEMS, 85.85.+j
   in biomedical engineering, 87.85.Ox
   flows in, 47.61.Fg
Mercury (planet), 96.30.Dz
Mergers (galaxies), 98.65.Fz
MESFET, 85.30.Tv
Mesic nuclei, 21.85.+d
Mesonic atoms and molecules, 36.10.Gv
Meson-meson interactions, 13.75.Lb
Mesons
   bottom mesons, 14.40.Nd
   charmed mesons, 14.40.Lb
   hadronic decays of, 13.25.-k
   exotic mesons, 14.40.Rt
   leptonic decays of, 13.20.-v
   light mesons, 14.40.Be
   in nuclear matter, 21.65.Jk
   production by photons and leptons, 13.60.Le
   properties of, 14.40.-n
   reactions and scattering induced by, 25.80.-e
   strange mesons, 14.40.Df
Mesophase rheology (liquid crystals), 83.80.Xz
Mesoscopic systems
   electronic transport in, 73.23.-b, 73.63.-b
   electron states and collective excitations in, 73.21.-b
   optical properties of, 78.67.-n
   structure and nonelectronic properties of, 68.65.-k
   superconducting, 74.78.Na
Mesosphere, 92.60.hc
Mesozoic period, *91.70.D-, 91.70.Dh
Metal-based composites, 81.05.Ni
Metal-insulator-metal structures, 73.40.Rw
Metal-insulator-semiconductor structures, 73.40.Qv
Metal-insulator transition, 71.30.+h
Metallic glasses
```

```
electronic structure of, 71.23.Cq
   synthesis of, 81.05.Kf
Metallization, integrated circuits, 85.40.Ls
Metal-metal contacts, 73.40.Jn
Metal-nonmetal contacts, 73.40.Ns
Metals
   amorphous (transport properties), 72.15.Cz
   band structure of, 71.20.Be, 71.20.Dg, 71.20.Eh, 71.20.Gj
   diamagnetism and paramagnetism in, 75.20.En
   equations of state, 64.30.Ef
   impurity and defect absorption in, 78.40.Kc
   impurity and defect levels in, 71.55.Ak
   infrared spectra, 78.30.Er
   liquid
     electrical and thermal conduction, 72.15.Cz
     electronic structure, 71.22.+i
     structure of, 61.25.Mv
   mass renormalization in, 71.38.Cn
   in material science, 81,05,Bx
   materials for magnetotransport, 75.47.Np
   metallic surfaces, 68.47.De
   nonelectronic thermal conduction in, 66.70.Df
   phase diagrams of, 81.30.Bx
   photoemission and photoelectron spectra, 79.60.Bm
   radiation effects on, 61.82.Bg
   Raman spectra of, 78.30.Er
   self-diffusion in, 66.30.Fq
   solid-solid transitions, 64.70.kd
   spin polarized transport in, 72.25.Ba
   structure of
     amorphous, 61.43.Dq
     crystalline, 61.66.Bi
   superconducting, 74.70.Ad
   surface structure of, 68.35.bd
   thin films
     electrical conductivity of, 73.61.At
     optical properties of, 78.66.Bz
   transport processes in, 72.15.-v
   visible and ultraviolet spectra of, 78.40.Kc
Metal-semiconductor-metal structures, 73.40.Sx
Metal vapor lasers, 42.55.Lt
Metamagnetism, 75.30.Kz
```

```
Metamaterials, 81.05.Xj, 78.67.Pt
Metastable phases, 64.60.My
Meteorites, 96.30.Za
Meteorological factors
   in acoustical noise propagation, *43.50.Vt
   in atmospheric optics, 42.68.Bz, 42.68.Ge, 42.68.Jg
   in atmospheric sound, *43.28.Fp
Meteorology, 92.60.-e
   hydrometeorology, 92.40.Zg
   polar, 92.60.Uy
   tropical, 92.60.Ox
   volcanic effects, 92.60.Zc
Meteors, 96.30.Za
   meteor-trail physics, 94.20.Xa
Methane
   as natural gas fuel for advanced vehicles, 88.85.mf
   from landfills, 88.20.dv
   fuel from biomass, 88.20.fq
   methane production
     from anaerobic digestion, 88.20.gh
     from decaying organic matter, 88.20.gf
     from Fischer-Tropsch liquids, 88.20.gc
Methanol (fuel from biomass), 88.20.fg
Metrology, 06.20.-f
   laser applications, 42.62.Eh
MHD modes (magnetic confinement), 52.55.Tn
Micelles, 82.70.Uv
   reactions in, 82.33.Nq
   rheology of, 83.80.Qr
Microcavity and microdisk lasers, 42.55.Sa
Microdosimetry, 87.53.Bn
Microelectromechanical systems (MEMS), 85.85.+j
   in biomedical engineering, 87.85.Ox
   flows in, 47.61.Fg
Microelectronics, 85.40.-e
   superconducting circuits, 85.25.Hv
   vacuum, 85.45.-w
Microemulsions
   complex fluids, 47.57.jb
   interfacial properties of, 68.05.Gh
Microgels (rheology), 83.80.Kn
Microgravity environments
```

```
for crystal growth, 81.10.Mx
   materials testing in, 81.70.Ha
Microlensing techniques (astronomy), 95.75.De
Micromachining
   in biomedical engineering, 87.85.Va
   in microelectronics, 85.40.Hp
Micromanipulators
   in biophysics and biomedical engineering, 87.80.Fe, 87.85.Uv
Micromasers, 42.50.Pq
Micromechanical devices, 07.10.Cm
Micromixing (micro- and nanoscale flow), 47.61.Ne
Microorganisms
   bacterial diseases, 87.19.xb
   in sea water, 92.20.Jt, *92.20.jb
   swimming of, 47.63.Gd
Microparticles
   magnetic materials, 75.50.Tt
   optical properties of, 78.66.Vs
Microphones, 43.38.Kb
Microscopy
   acoustical, *43.35.Sx, *43.58.Ls
   atomic force
     in biophysics, 87.64.Dz
     instrumentation for, 07.79.Lh
     in structure determination, 68.37.Ps
   electron
     in biophysics, 87.64.Ee
     in dislocation observations, 61.72.Ff
     instrumentation for, 07.78.+s
     in structure determination, 68.37.Ef, 68.37.Hk, 68.37.Lp, 68.37.Nq
   field-ion and field emission
     instrumentation for, 07.78.+s
     in structure determination, 68.37.Vj
   friction force, 07.79.Sp
   magnetic force
     instrumentation for, 07.79.Pk
     in structure determination, 68.37.Rt
   optical
     in biophysics, 87.64.M-
     conventional, 07.60.Pb
     near-field scanning, 07.79.Fc
   scanning tunneling
```

```
in biophysics, 87.64.Dz
     instrumentation for, 07.79.Fc
     in structure determination, 68.37.Ef
   x ray
     instrumentation for, 07.85.Tt
     of surfaces, interfaces, and thin films, 68.37.Yz
Microstructure
   crystals, 61.72.-y
   liquid crystals, 61.30.Cz
   materials treatment effects on, 81.40.-z
   by solidification, 81.30.-t
Microtubules
   in subcellular structure and processes, 87.16.Ka
Microwave circuits, 84.40.Dc
   integrated, 84.40.Lj
Microwave optical double resonance spectroscopy, 33.40.+f
Microwave radiation
   effects on biological systems, 87.50.S-
   interactions with condensed matter, 78.70.Gq
   in plasma, 52.25.Os
   plasma heating by, 52.50.Sw
   receivers and detectors, 07.57.Kp
   sources of, 07.57.Hm
   therapeutic applications, 87.50.ux
   wave propagation, 41.20.Jb, 84.40.-x
Microwave spectra
   astronomical observations, 95.85.Bh
   of atoms, 32.30.Bv
   of molecules, 33.20.Bx
   in chemical analysis, 82.80.Ha
Microwave spectrometers, 07.57.Pt
Microwave technology, 84.40.-x
Microwave tubes, 84.40.Fe
Mid-ocean ridges
   geochemical processes in, *91.67.ff
   in marine geology, 91.50.Rt
   seismology of, 91.30.Hc
   in volcanology, 91.40.St
Mie scattering, 42.25.Fx, 42.68.Mj
Military technology, 89.20.Dd
Milky Way, 98.35.-a
   solar neighborhood, 98.35.Pr
```

```
Millimeter wave technology, 84.40.-x
Milling, 81.20.Wk
Mineralogy, 91.65.-n
   fluid flow, 91.65.My
   metamorphism, 91.65.Pj, 91.65.Qr
   Moon, 96.20.Dt
   pressure-temperature-time paths, 91.65.Lc
Minerals
   biogenic magnetic, 91.25.fa
   crystal chemistry, 91.65.An
   isotopic composition, 91.65.Dt
   magnetic and electrical properties, 91.25.F-, 91.60.Pn
   major element composition, 91.67.Pq
   occurrences and deposits, 91.65.Rg
   permeability, 91.60.Np
   physical properties of, 91.60.-x
   trace elements, 91.67.Pq
Minisuperspace models, 04.60.Kz
Minor planets, 96.30.Ys
Mirrors
   magnetic (plasma), 52.55.Jd
   optical, 42.79.Bh
     design, 42.15.Eq
Mitochondria, 87.16.Tb
Mixed conductivity, 72.60.+g
Mixed state (superconductivity), 74.25.Op
Mixed-valence solids, 71.28.+d, 75.20.Hr, 75.30.Mb
Mixers, electronic, 84.30.Qi
Mixing
   fluids, 47.51.+a
   granular systems, 45.70.Mg
   materials processing (rheology), 83.50.Xa
   microscale flows, 47.61.Ne
   phase equilibria (condensed matter), 64.75.Ef
   turbulent flow, 47.27.wj
Mixtures
   Bose-Fermi mixtures, 67.60.Fp, 67.85.Pq
   boson mixtures, 67.60.Bc
   of helium-3 and helium-4, 67.60.-g
Mobility edges, 72.20.Ee
MOCVD, 81.15.Gh
   chemistry of, 82.33. Ya
```

```
Mode coupling, in plasmas, 52.35.Mw
Mode locking, 42.60.Fc
Moderators (nuclear reactors), 28.41.Pa
Modulation doped field effect transistors (MODFET), 85.30.Tv
Modulation transfer functions
   atmospheric optics, 42.68.-w
   imaging and optical processing, 42.30.Lr
Modulators
   electronic, 84.30.Qi
   lasers, 42.60.Fc
   optical, 42.79.Hp
Moir� patterns, 42.30.Ms
Moisture
   in atmosphere, *92.60.J-, 92.60.Jq
   measurement of, 07.07.Vx
   in soil, 92.40.Lg
Molding, 81.20.Hy
Molecular beam epitaxy, 81.15.Hi
Molecular beams
   in chemical reactions, 34.50.Lf
   interactions with solids, 79.20.Rf
   irradiation effects of, 61.80.Lj
   sources and detectors of, 07.77.Gx, 37.20.+j
Molecular biophysics, 87.15.-v
Molecular clouds
   in external galaxies, 98.58.Db
   in the Milky Way, 98.38.Dq
Molecular clusters, 36.40.-c
Molecular collisions. see 34
Molecular conformation, 33.15.Bh
   of biomolecules, 87.15.hp
   of macromolecules and polymers, 36.20.Ey
Molecular dynamics
   correlation times in, 33.15.Vb
   of macromolecules and polymers, 36.20.Ey
   in rheology, 83.10.Mj
     computer simulation of, 83.10.Rs
Molecular dynamics calculations
   in atomic and molecular physics, 31.15.xv
   in biological physics, 87.10.Tf, 87.15.ap
   in electronic structure of solids, 71.15.Pd
   in fluid dynamics, 47.11.Mn
```

```
in liquid structure modeling, 61.20.Ja
   in mathematical physics, 02.70.Ns
   in plasmas, 52.65.Yy
   in structural modeling of disordered solids, 61.43.Bn
Molecular electronic devices, 85.65.+h
Molecular flows, 47.45.Dt
Molecular interactions
   in astrophysics, 95.30.Ft
   in biomolecules, 87.15.K-
Molecular liquids
   structure of, 61.25.Em
Molecular moments, 33.15.Kr
Molecular nanostructures, fabrication of, 81.07.Nb
Molecular-orbital methods applied to
   atoms and molecules, 31.15.xr
   solids, 71.15.Ap
Molecular sieves, 82.75.-z
Molecular solids, 31.70.Ks
Molecular spectra, 33.20.-t
   in astrophysics, 95.30.Ky
Molecular structure, 33.15.-e
Molecular weights (macromolecules and polymers), 36.20.Cw
Molecule manipulation
   proteins and other biological molecules, 82.37.Rs
   STM and AFM studies, 82.37.Gk
Molecule-molecule reactions, 82.30.Cf
Molecule-surface collisions, 34.35.+a, 79.20.Rf
   Coulomb explosion, 79.77.+g
Molecules
   in cavities, 37.30.+i
   cooling and trapping of, 37.10.Mn, 37.10.Pq
   scattering, 34.50.-s
     from surfaces, 34.35.+a
     surface characterization, 68.49.Df,
Molten-carbonate fuel cells (MCFC), 82.47.Lh
Molten salts, structure of, 61.20.Qg
Momentum conservation, 45.20.df
Monochromators, charged-particle, 41.85.Si
Monographs, 01.30.Ee
Monolayers, 68.18.-g, 68.47.Pe
   in electrochemistry, 82.45.Mp
   magnetic properties of, 75.70.Ak
```

```
Monolytic integrated circuits, 85.40.-e
Monopoles, magnetic, 14.80.Hv
Monte Carlo methods
   in biological physics, 87.10.Rt, 87.15.ak, 87.16.af
   disordered solids, 61.43.Bn
   liquid structure, 61.20.Ja
   in mathematical physics
     applications of, 02.70.Uu
     modifications of, 02.70.Tt
     quantum Monte Carlo, 02.70.Ss
   nuclear-reaction models, 24.10.Lx
   nuclear structure, 21.60.Ka
   plasma simulation, 52.65.-y
   in probability theory and statistics, 02.50.Ng
   radiation therapy, 87.55.K-
   statistical physics and nonlinear dynamics, 05.10.Ln
   in treatment strategy (medical physics), 87.55.K-
     algorithms, 87.55.kd
     applications, 87.55.kh
     verification, 87.55.km
Moon, 96.20.-n
Morphogenesis, 87.17.Pq
MOS devices, 85.30.Tv
MOSFET, 85.30.Tv
Mï¿1/2ssbauer spectroscopy
   in biophysics, 87.64.kx
   in chemical analysis, 82.80.Ej
   of molecules, 33.45.+x
   of solids, 76.80.+y
   in structure determination, 61.05.Qr
Motion (classical mechanics), 45.50.Dd
Motion sensors, 07.07.Df
Motor proteins, 87.16.Nn
Motors, 84.50.+d
Motor system diseases, 87.19.xe
MRI
   in condensed matter, 76.60.Pc
   in medical imaging, 87.61.-c
   in neuroscience, 87.19.lf
M theory
   strings and branes, 11.25.Yb
Multicellular phenomena, 87.18.Fx
```

```
Multicomponent plasmas, 52.27.Cm
Multidimensional NMR, 82.56.Fk
Multiferroics, 75.85.+t
   multiferroic dielectric films, 77.55.Nv
Multilayers
   electron states and collective excitations in, 73.21.Ac
   magnetic properties of, 75.70.Cn
   optical properties of, 78.67.Pt
   structure and nonelectronic properties of, 68.65.Ac
   superconducting, 74.78.Fk
Multinuclear NMR, 82.56.Hg
Multiphase flows, 47.55.-t
   micro- and nanoscale flows, 47.61.Jd
Multiphoton absorption by surfaces, 79.20.Ws
Multiphoton ionization and excitation
   atomic spectra, 32.80.Rm
   molecular spectra, 33.80.Rv
   in quantum optics, 42.50.Hz
Multiphoton microscopy in biophysics, 87.64.mn
Multiphoton processes, in photochemistry, 82.50.Pt
Multiple resonances (molecular spectroscopy), 33.40.+f
Multiple scattering (relativistic theory), 11.80.La
Multiplexers, 42.79.Sz
Multivariate analysis, 02.50.Sk
Muon-hadron scattering, 13.60.-r
Muonic atoms and molecules, 36.10.Ee
   QED corrections, 31.30.jr
Muon-induced nuclear reactions, 25.30.Mr
Muonium, 36.10.Ee
   chemical reactions, 82.20.Tr
Muons
   in astronomical observations, 95.85.Ry
   capture by nuclei, 23.40.-s
   decays, 13.35.Bv
   properties of, 14.60.Ef
   scattering, 25.30.Mr
Muon spin rotation and relaxation, 76.75.+i
Muscles, 87.19.Ff
Musculoskeletal diseases, 87.19.xn
Musical sounds, analysis, synthesis and processing, *43.75.Zz
Music and musical instruments, 43.75.+a, *43.75.-z
   electronic, computer music, *43.75.Wx
```

```
wind instruments, *43.75.Pq, *43.75.Qr
Music recognition and classification (automatic), *43.75.Xz
Nambu-Goldstone bosons, 14.80.Va
Nanoaggregates, optical properties of, 78.67.Sc
Nanocontacts
   electronic transport in, 73.63.Rt
   fabrication of, 81.07.Lk
Nanocrystalline materials
   diffusion in, 66.30.Pa
   in electrochemistry, 82.45.Yz
   electronic structure of, 73.22.-f
   electronic transport in, 73.63.Bd
   fabrication, 81.07.Bc
   magnetic, 75.50.Tt
   mechanical properties of, 62.25.-g
   optical properties of, 78.67.Bf
   phase transitions in, 64.70.Nd
   phonons or vibrational states, 63.22.Kn
   radiation effects, 61.82.Rx
   thermal properties of, 65.80.-g
Nanocrystals
   optical properties, 78.67.Bf
   phonons in, 63.22.Kn
   structure of, 61.46.Hk
   thermal properties, 65.80.-g
Nanodiffraction, 61.05.jm
Nanodots, 62.23.Eg
Nanodroplets, optical properties of, 78.67.Tf
Nanoelectromechanical systems, 85.85.+j
Nanoelectronic devices, 85.35.-p
Nanofabrication, methods of, 81.16.-c
Nanolithography, 81.16.Nd
Nanomicelles, optical properties of, 78.67.Ve
Nano-oxidation, 81.16.Pr
Nanoparticles
   electronic structure of, 73.22.-f
   magnetic properties of, 75.75.Fk
   optical properties of, 78.67.Bf
   phonons in, 63.22.-m
   structure of, 61.46.Df
   thermal properties of, 65.80.-g, 82.60.Qr
Nanoporous materials, optical properties of, 78.67.Rb
```

```
Nanopowders, 81.07.Wx
Nanorods
   structure of, 61.46.Km
   optical properties of, 78.67.Qa
Nanoscale flows, 47.61.-k
   flows in MEMS and NEMS, 47.61.Fg
   multiphase flows, 47.61.Jd
Nanoscale materials
   electronic transport, 73.63.-b
   fabrication and characterization, 81.07.-b
   phonons in, 63.22.-m
   structural transitions in, 64.70.Nd
   structure of, 61.46.-w
Nanoscale pattern formation, 81.16.Rf
Nanoscale systems
   brittleness, 62.25.Mn
   electron states and collective excitations in, 73.21.-b
   fracture, 62.25.Mn
   mechanical properties, 62.25.-g
     high-frequency properties, 62.25.Fg
     low-frequency properties, 62.25.De
     mechanical modes of vibration, 62.25.Fg
   phase separation and segregation in, 64.75.Jk
   structural classes of, 62.23.-c
   in superconductivity, 74.78.Na
Nanosecond techniques, 06.60.Jn
Nanosheets, 62.23.Kn
Nanostructures
   complex, 62.23.St
   electronic transport in, 73.63.-b
   electron states and collective excitations in, 73.21.-b
   embedded in larger structures, 62.23.Pq
   fabrication of, 81.07.-b
     magnetic nanostructures fabrication, 75.75.Cd
   femtochemistry of, 82.53.Mj
   magnetic properties of, 75.75.-c
     domain structures in nanoparticles, 75.75.Fk
     dynamics of magnetic nanoparticles, 75.75.Jn
     electronic structure of magnetic nanoparticles, 75.75.Lf
   materials treatment effects on, 81.40.-z
   optical properties of, 78.67.-n
   patterned, 62.23.St
```

```
photoemission and photoelectron spectra of, 79.60.Jv
   structure and nonelectronic properties of, 68.65.-k
   superconducting, 74.78.Na
Nanotechnology
   biomedical applications, 87.85.Qr, 87.85.Rs
   methods of nanofabrication and processing, 81.16.-c
   nanoelectromechanical systems, 85.85.+j
   nanoelectronic devices, 85.35.-p
   nanoscale materials and structures, 81.07.-b
Nanotubes
   boron, 61.48.De
   carbon, 61.48.De
   devices, 85.35.Kt
   electronic structure of, 73.22.-f
   electronic transport in, 73.63.Fg
   fabrication of, 81.07.De
   optical properties of, 78.67.Ch
   phonons in, 63.22.Gh
   structure of, 61.46.Np, 61.48.De
   thermal properties of, 65.80.-g
Nanowires, 62.23.Hj
   fabrication, 81.07.Gf
   phonons in, 63.22.Gh
   structure of, 61.46.Km
   optical properties of, 78.67.Uh
Narrow-band semiconductors (electron states), 71.28.+d
National laboratory facilities, 01.52.+r
Natural gas, 89.30.an
   as fuel for advanced vehicles, 88.85.mf
Natural materials, rheology of, 83.80.Mc
Navier-Stokes equations, 47.10.ad
(n,d) reactions, 25.40.Hs
Near-field scanning optical microscopy, 68.37.Uv
   in biophysics, 87.64.mt
   instrumentation for, 07.79.Fc
Nebulae
   in external galaxies, 98.58.-w
   in Milky Way, 98.38.-j
   solar, 96.10.+i
Negative-ion plasmas, 52.27.Cm
Negative resistance, 72.20.Ht, 73.50.Fq
Nematic liquid crystals
```

```
phase transitions in, 64.70.M-
   rheology of, 83.80.Xz
   structure of, 61.30.-v
NEMS
   nanoelectronic devices, 85.85.+j
   fabrication of, 81.07.0j
   flows in, 47.61.Fg
Neogene period, *91.70.bc
Neptune, 96.30.Rm
   Neptunian satellites, 96.30.Td
   trans-Neptunian objects, 96.30.Xa
Neutralinos, 14.80.Nb
Nerve cells, morphology of, 87.16.Mq
Networks
   in phase transitions, 64.60.aq
Neural engineering, 87.85.Wc
Neural networks, 84.35.+i
   acoustical, *43.60.Np
   in applied neuroscience, 87.85.dq
   in biological complexity, 87.18.Sn
   in computers, 07.05.Mh
   in neuroscience, 87.19.II
   optical, 42.79.Ta
   for speech recognition, *43.72.Bs
Neural prosthetics, 87.85.E-
   charge injection in, 87.85.ej
   electrode stimulation in, 87.85.eg
   tissue damage, 87.85.em
Neurons, 87.19.II
Neurophysiology
   of speech perception, *43.71.Qr
Neuroscience, 87.19.L-
   applied, in biomedical engineering
     brain-machine interface, 87.85.dd
     cells on a chip, 87.85.dh
     neural networks, 87.85.dq
     physical models of neurophysiological processes, 87.85.dm
   control theory and feedback in, 87.19.lr
   of development and growth, 87.19.lx
   EEG and MEG in, 87.19.le
   encoding and decoding in, 87.19.ls
   imaging in
```

```
MRI, anatomic and functional, 87.19.lf
     optical imaging of neuronal activity, 87.19.lh
   learning and memory, 87.19.lv
   motor systems in, 87.19.lu
   nervous system
     axons, action potential propagation in, 87.19.lb
     electrodynamics in, 87.19.ld
     glia, 87.19.lk
      neurons, models of, 87.19.II
     noise in, 87.19.lc
     synapses, 87.18.Sn, 87.19.lg
     synchronization in, 87.19.lm
   neuronal network dynamics, 87.19.lj
   neuronal wave propagation, 87.19.lq
   pattern formation in, 87.19.lp
   plasticity in, 87.19.lw
   of sensory systems, 87.19.lt
Neutral currents, 12.15.Mm
Neutral Higgs bosons, 14.80.Ec
Neutrino oscillations, 14.60.Pq
Neutrinos
   in astronomical observations, 95.85.Ry
   cosmic rays
     galactic, 98.70.Sa
   decays of, 13.35.Hb
   interactions, 13.15.+g
   mass and mixing, 14.60.Pq
   in nonstandard model, 14.60.St
   in nuclear scattering, 25.30.Pt
   ordinary, 14.60.Lm
   right-handed, 14.60.St
   solar, 26.65.+t, 96.60.Jw
Neutron diffraction
   in biophysics, 87.64.Bx
   in structure determination, 61.05.fm
Neutron dosimetry, 87.53.Bn
Neutron-hyperon interactions, 13.75.Ev
Neutron-induced fission, 25.85.Ec
Neutron imaging
   neutron physics, 28.20.Pr
   in solid state structure determination, 61.05.Tv
   in medical imaging, 87.57.Va
```

```
Neutron interferometry, 03.75.Dg
Neutron matter
   nuclear matter, 21.65.Cd
Neutron-meson interactions, 13.75.-n, 13.85.-t
Neutron-neutron interactions, 13.75.Cs, 13.85.-t
Neutron optics, 03.75.Be
Neutron-pion interactions, 13.75.Gx, 13.85.-t
Neutron-proton interactions, 13.75.Cs, 13.85.-t
Neutron reflectometry
   in structure determination, 61.05.fj
Neutrons
   absorption, 28.20.Fc
   diffusion and moderation, 28.20.Gd
   distribution in nuclei, 21.10.Gv
   properties of, 14.20.Dh
   radiation damage by, 61.80.Hg
   sources of, 29.25.Dz
Neutron scattering, 28.20.Cz
   elastic, 25.40.Dn
   inelastic
     condensed matter, 78.70.Nx
     in nuclear reactions, 25.40.Fq
   radiative capture, 25.40.Lw
   spin arrangements determination, 75.25.-j
   in structure determination, 61.05.fg
Neutron shielding
   in medical physics, 87.55.N-
   nuclear engineering, 28.20.Fc
Neutron spectroscopy, 29.30.Hs
Neutron stars, 97.60.Jd
   core, 26.60.Dd
   crust, 26.60.Gj
   equations of state, 26.60.Kp
   nuclear matter aspects of, 26.60.-c
Newtonian mechanics, 45.20.D-
NEXAFS
   in structure determination, 61.05.cj
Nightglow, 92.60.hw
Niobates
   dielectric materials, 77.84.Bw
   niobate-based dielectric films, 77.55.fj
   superconductors, 74.70.Ad
```

```
Nitrides
   dielectric materials, 77.84.Bw
   refractories, 81.05.Je
   superconductors, 74.70.Ad
Nitrogen cycling (biogeosciences), *91.62.La
NMR imaging
   in condensed matter, 76.60.Pc
   in medical imaging, 87.61.-c
   in neuroscience, 87.19.lf
Noise
   acoustic, *43.50.-x, 43.50.+y
     underwater, *43.30.Nb
   in biological complexity, 87.18.Tt
   electrical circuits, 07.50.Hp
   electronic
     bulk matter, 72.70.+m
     thin films, 73.50.Td
   fluctuation phenomena, 05.40.Ca
   in integrated circuits, 85.40.Qx
   in lasers, 42.60.Mi
   quantum, 42.50.Lc
   superconductivity fluctuations, 74.40.De
   turbulence-generated, 47.27.Sd
Nondestructive testing
   of materials, 81.70.-q
   in structural acoustics, *43.40.Le
Nonequilibrium processes
   chemical reaction kinetics, 82.40.Bj
   gas dynamics, 47.70.Nd
   in superconductivity, 74.40.Gh
   thermodynamics, 05.70.Ln
Non-Fermi-liquid ground states, 71.10.Hf
Nonhomogeneous flows, 47.55.-t
Nonlinear acoustics, *43.25.-x, 43.25.+y
Nonlinear dynamics, 05.45.-a
Nonlinear guided waves, 42.65.Tg
Nonlinear (nonlocal) field theory, 11.10.Lm
Nonlinear optical materials, 42.70.Mp, 42.70.Nq
Nonlinear optical spectroscopy
   coherent, 78.47.jh
   four-wave mixing spectroscopy, 78.47.nj
   high resolution, 78.47.N-
```

```
hole burning spectroscopy, 78.47.nd
Nonlinear optics, 42.65.-k
   with polymers, 82.35.Ej
Nonlinear symmetries, 11.30.Na
Nonlinear waveguides, optical, 42.65.Wi
Nonmetals
   equations of state, 64.30.Jk
   diamagnetism and paramagnetism in, 75.20.Ck
   ferromagnetic materials, 75.50.Dd
Non-neutral plasmas, 52.27.Jt
Non-Newtonian fluid flows, 47.50.-d
Nonradiative transitions, 32.50.+d, 33.50.-j
Non-standard-model particles
   Higgs bosons
     charged, 14.80.Fd
     neutral, 14.80.Ec
     supersymmetric, 14.80.Da
   neutrinos, 14.60.St
   production in electron-positron interactions, 13.66.Hk
Normalization coefficients, asymptotic, 21.10.Jx
North America, 93.30.Hf
Novae, 97.30.Qt, 97.80.Gm
   nuclear physics aspects of, 26.50.+x
   nucleosynthesis in, 26.30.-k
Nozzle flow, 47.60.Kz
(n,p) reactions, 25.40.Kv
(N,t) and (N,3He), reactions, 25.40.Hs
Nuclear astrophysics
   Big Bang nucleosynthesis, 26.35.+c
   cosmic ray nucleosynthesis, 26.40.+r
   hydrostatic stellar nucleosynthesis, 26.20.-f
   nuclear matter aspects of neutron stars, 26.60.-c
   nucleosynthesis in novae and supernovae, 26.30.-k
   solar neutrinos, 26.65.+t
Nuclear binding energy, 21.10.Dr
Nuclear charge, 21.10.Ft
Nuclear collective resonances, 24.30.Cz, 24.30.Gd
Nuclear Coulomb effects, 21.10.Sf
Nuclear data analysis, 29.85.-c
Nuclear decay. See 23
Nuclear deformation
   nucleon distribution, 21.10.Gv
```

```
Nuclear emulsions, 29.40.Rg
Nuclear energy levels, 21.10.-k
   collective levels, 21.10.Re
   electromagnetic transitions
     level energies, 23.20.Lv
   level density, 21.10.Ma
   lifetimes, widths, 21.10.Tg
   single-particle levels, 21.10.Pc
Nuclear engineering
   fission reactors, 28.41.-i, 28.50.-k
   fusion reactors, 28.52.-s
   isotope separation and enrichment, 28.60.+s
   neutron capture gamma rays, 28.20.Np
   neutron shielding, 28.20.Fc
   thermal neutron cross sections, 28.20.Ka
Nuclear explosions, 28.70.+y
Nuclear fission, 24.75.+i, 25.85.-w
Nuclear fission power, 89.30.Gg
Nuclear forces, 21.30.-x
Nuclear form factors, 13.40.Gp, 21.10.Ft
Nuclear fusion power, 89.30.Jj
Nuclear g-factors, 21.10.Ky
Nuclear giant resonances, 24.30.Cz
Nuclear hole states, 21.10.Pc
Nuclear magnetic resonance (NMR)
   in biophysics, 87.64.kj, 87.80.Lg
   in chemical physics, 82.56.-b
   in condensed matter, 76.60.-k
   defect structure determinations by, 61.72.Hh
   in molecules, 33.25.+k
   in structure determination, 61.05.Qr, 82.56.Ub
   in superconductors, 74.25.nj
Nuclear mass, 21.10.Dr
Nuclear matter, 21.65.-f
   asymmetric matter, 21.65.Cd
   equations of state, 21.65.Mn
   mesons in, 21.65.Jk
   neutron matter, 21.65.Cd
   quark matter, 21.65.Qr
Nuclear models, 21.60.-n
   cluster models, 21.60.Gx
   collective models, 21.60.Ev
```

```
shell model, 21.60.Cs
Nuclear moments, 21.10.Ky
Nuclear morphology
   in subcellular structure and processes, 87.16.Zg
Nuclear orientation devices, 29.30.Lw
Nuclear Overhauser effect, 33.35.+r
Nuclear parity, 21.10.Hw
Nuclear power
   nuclear reactors
     fission reactors, 28.41.-i
     accidents, 28.41.Te
     cooling and heat recovery, 28.41.Fr
     decommissioning, dismantling, 28.41.Te
     design, 28.41.Ak
     fuel cycles, 28.41.Vx
     fuel elements, 28.41.Bm
     instrumentation, 28.41.Rc
     moderators, 28.41.Pa
     reactor coolants, 28.41.Fr
     reactor control systems, 28.41.My
     radiation monitoring, 28.41.Te
     radioactive wastes, 28.41.Kw
     safety, 28.41.Te
     shielding, 28.41.Qb
     waste disposal, 28.41.Kw
     theory, and simulation, 28.41.Ak
     types of
       auxiliary generators, 28.50.Ma
       breeder reactors, 28.50.Ft
       power reactors, 28.50.Hw
       propulsion reactors, 28.50.Ky
       research reactors, 28.50.Dr
     fusion reactors, 28.52.-s
       components, 28.52.Lf
       fueling, 28.52.Cx
       heating and ignition, 28.52.Cx
       instrumentation, 28.52.Lf
       materials for, 28.52.Fa
       safety, 28.52.Nh
Nuclear properties, 21.10.-k
   binding energies, 21.10.Dr
   charge distribution, 21.10.Ft
```

```
nucleon distribution and halo features, 21.10.Gv
    of specific nuclei (see 27)
    spin and parity, 21.10.Hw
Nuclear quadrupole resonance
    in condensed matter, 76.60.Gv
    in molecules, 33.25.+k
Nuclear reactions
    <sup>2</sup>H-induced reactions, 25.45.-z
    <sup>3</sup>H-, <sup>3</sup>He -, and <sup>4</sup>He -induced reactions, 25.55.-e
    antiproton-induced, 25.43.+t
    direct, 24.50.+g
    fission reactions
      charged-particle-induced, 25.85.Ge
     general properties of, 24.75.+i
      neutron-induced, 25.85.Ec
      photofission, 25.85.Jg
      spontaneous, 25.85.Ca
    fusion-fission reactions, 25.70.Jj
    fusion reactions
      <sup>2</sup>H-induced, 25,45,-z
      low energy heavy-ion reactions, 25.70.Jj
      unstable-nuclei-induced, 25.60.Pj
    heavy-ion reactions
      low and intermediate energy, 25.70.-z
    involving few nucleons, 25.10.+s
    lepton-induced, 25.30.-c
      electron scattering
          elastic, 25.30.Bf
          inelastic, 25.30.Dh, 25.30.Fj
      electroproduction, 25.30.Rw
      muon-induced, 25.30.Mr
      neutrino-induced, 25.30.Pt
      positron-induced, 25.30.Hm
    meson- and hyperon-induced, 25.80.-e
    models of, 24.10.-i
    nucleon-induced, 25.40.-h
    photonuclear reactions, 25.20.-x
    polarization in, 24.70.+s
    resonance reactions, 24.30.-v
    surrogate reactions, 24.87.+y
    unstable-nuclei-induced, 25.60.-t
      charge-exchange reactions, 25.60.Lg
```

```
fusion reactions, 25.60.Pj
     radiative capture in, 25.60.Tv
Nuclear reactors
   fission reactors, 28.41.-i
     accidents, 28.41.Te
     cooling and heat recovery, 28.41.Fr
     decommissioning, dismantling, 28.41.Te
     design, 28.41.Ak
     fuel cycles, 28.41.Vx
     fuel elements, 28.41.Bm
     instrumentation, 28.41.Rc
     moderators, 28.41.Pa
     reactor coolants, 28.41.Fr
     reactor control systems, 28.41.My
     radiation monitoring, 28.41.Te
     radioactive wastes, 28.41.Kw
     safety, 28.41.Te
     shielding, 28.41.Qb
     waste disposal, 28.41.Kw
     theory, and simulation, 28.41.Ak
   types of
     auxiliary generators, 28.50.Ma
     breeder reactors, 28.50.Ft
     power reactors, 28.50.Hw
     propulsion reactors, 28.50.Ky
     research reactors, 28.50.Dr
   fusion reactors, 28.52.-s
     components, 28.52.Lf
     fueling, 28.52.Cx
     heating and ignition, 28.52.Cx
     instrumentation, 28.52.Lf
     materials for, 28.52.Fa
     safety, 28.52.Nh
Nuclear shell model, 21.60.Cs
Nuclear tests of fundamental interactions and symmetries, 24.80.+y
Nuclear wastes
   waste disposal, 28.41.Kw
Nucleation
   chemical thermodynamics of, 82.60.Nh
   in crystal growth, 81.10.Aj
   in film growth, 68.55.A-
   in phase transitions, 64.60.Q-
```

```
Nucleic acids, 87.14.G-
   DNA, 87.14.gk
   nucleotides, 87.14.gf
   RNA, 87.14.gn
Nucleon decays, 13.30.-a, 14.20.Dh
Nucleon distribution (nuclear structure), 21.10.Gv
Nucleon-hyperon interactions, 13.75.Ev
Nucleon-induced reactions, 25.40.-h
Nucleon-kaon interactions, 13.75.Jz
Nucleon-meson interactions, 13.75.Gx, 13.85.-t
Nucleon-nucleon interactions, 13.75.Cs, 13.85.-t
Nucleon-pion interactions, 13.75.Gx, 13.85.-t
Nucleons, 14.20.Dh
Nucleosynthesis
   Big Bang, 26.35.+c
   cosmic ray, 26.40.+r
   in cosmology, 98.80.Ft
   in late stellar evolution, 26.20.Np
   stellar, 97.10.Cv
     hydrostatic, 26.20.-f
     in novae, supernovae, 26.30.-k
Nucleotides, 87.14.gf
Nucleus, compound
   in heavy-ion reactions, 25.70.Gh
   statistical theory of, 24.60.Dr
Number theory, 02.10.De
Numerical methods (mathematics), 02.60.-x
Obduction zones (tectonophysics), 91.45.Hc
Obituaries, 01.60.+q, *43.05.Sf
Observatories, 95.45.+i
Occultations, 95.10.Gi
Ocean basin thermometry, *43.30.Qd
Ocean biology, *92.20.J-, 92.20.Jt
Ocean bottom processes, 92.10.Oc, 92.20.lv
Ocean chemistry, *92.20.C-, 92.20.Cm
Ocean drilling, 91.50.Sn
Ocean/Earth/atmosphere interaction, 91.10.Vr
Oceanic crust
   chemical composition, *91.67.gf
   seismology of, 91.30.Ye
Oceanic plateaus, 91.50.Uv
Oceanographic regions, 93.30.-w
```

```
Oceanography
   acoustical methods in, *43.30.Pc
   circulation and currents, 92.10.A-
     Eastern and Western boundary currents, 92.10.ah
   coastal, 92.10.Sx
   eddies, 92.10.ak
   El Nino Southern Oscillation, 92.10.am
   jets, 92.10.Ty
   overflows, 92.10.Ua
   upwelling, 92.10.Zf
Ocean optics, 42.68.Xy
Oceans
   biology of, *92.20.J-, 92.20.Jt
     anoxic environments, 92.20.Hs
     bacteria, 92.20.Jt, *92.20.jb
     hypoxic environments, 92.20.Ox
     nutrients and nutrient cycling, 92.20.Jt, *92.20.ju
     plankton, 92.20.Jt, *92.20.jf, *92.20.jh
     symbiosis, 92.20.Jt, *92.20.jd
   chemistry of, *92.20.C-, 92.20.Cm
     trace elements, 92.20.Wx
   energy extraction, 92.05.Jn
   fine structure and microstructure of, 92.10.Ns
   fog, 92.10.Xc
   global changes in, 92.70.Jw
   long term variability, 92.05.Ek
   ocean/atmosphere interactions, 92.60.Cc
   optics of, 42.68.Xy
   radioactivity, 92.20.Td
   sedimentation, 92.20.Vn
Ocean waves, *92.10.H-, 92.10.Hm
   capillary waves, *92.10.hd
   Kelvin waves, *92.10.hh
   Rossby waves, *92.10.hf
   tsunamis, *92.10.hl
ODMR, 76.70.Hb
Ohmic contacts, 73.40.Cg
Oil (fossil fuel), 89.30.aj
Oil prospecting, 93.85.Tf
Olfaction (sensory systems), 87.19.lt
One-dimensional conductivity, 72.15.Nj
Oort cloud, 96.50.Hp
```

Operational calculus, 02.30.Vv Operator theory, 02.30.Tb Ophiolites (marine geology), 91.50.Vx Ophthalmic optics, 42.66.Ct Optical absorption in atmosphere, 42.68.Ay, 92.60.Ta in atoms, 32.30.Jc in biomolecules, 87.15.Min condensed matter, 78.20.Ci in molecules, 33.20.Kf in plasma, 52.25.Os wave propagation, 42.25.Bs Optical activity in bulk materials and thin films, 78.20.Ek in molecules, 33.55.+b Optical angular momentum (quantum optics), 42.50.Tx Optical beam splitters, 42.79.Fm Optical bistability, 42.65.Pc Optical coatings, 42.79.Wc Optical collimators, 42.79.Ag Optical communication systems, 42.79.Sz Optical computers, 42.79.Ta Optical constants, 78.20.Ci Optical cooling and trapping of atoms, 37.10.Jk in biophysics, 87.80.Cc of molecules, 37.10.Mn, 37.10.Pq Optical correlators, 42.79.Hp Optical couplers, 42.82.Et fiber-optical, 42.81.Qb non-fiber-optical, 42.79.Gn Optical design, 42.15.Eq Optical devices, 42.79.-e Optical disks, 42.79.Vb Optical double-resonance spectroscopy, 33.40.+f Optical elements, 42.79.-e Optical fibers, 42.81.-i fiber networks, 42.81.Uv Optical filters, 42.79.Ci Optical frequency converters, 42.79.Nv Optical frequency synthesizers, 42.62.Eh Optical instabilities (quantum optics), 42.65.Sf

```
Optical instruments, 07.60.-j
Optically detected magnetic resonance (ODMR), 76.70.Hb
Optical materials, 42.70.-a
Optical methods in rheology, 83.85.Ei
Optical mixing, 42.65.Hw
Optical models (nuclear reactions), 24.10.Ht
Optical modulators, 42.79.Hp
Optical nutation
   in quantum optics, 42.50.Md
   in ultrafast spectroscopy, 78.47.jp
Optical processors, 42.79.Hp
Optical properties
   of bulk materials and thin films, 78.20.-e
      birefringence, 78.20.Fm
      electro-optical effects, 78.20.Jq
      magneto-optical effects, 78.20.Ls
      piezo-, elasto-optical effects
       acousto-optical effects, 78.20.hb
       elasto-optical effects, 78.20.hb
       photoelastic effects, 78.20.hb
       piezo-optical effects, 78.20.hb
     optical activity, 78.20.Ek
      optical constants, 78.20.Ci
      theory and models of, 78.20.Bh
     thermo-optic effects, 78.20.N-
       photopyroelectric effects, 78.20.nc
       photothermal effects, 78.20.nb
       thermophotonic effects, 78.20.nd
   of clusters, 36.40.Vz
   of fluid materials, 78.15.+e
   of gases, 51.70.+f
   of graphene, 78.67.Wj
   of liquid crystals, 78.15.+e
   materials treatment effects on, 81.40.Tv
   of multilayers, 78.67.Pt
   of nanoscale materials and structures
      nanoaggregates, 78.67.Sc
      nanoclusters, 78.67.Bf
      nanocrystals, 78.67.Bf
      nanodroplets, 78.67.Tf
      nanomicelles, 78.67.Ve
      nanoparticles, 78.67.Bf
```

```
nanoporous materials, 78.67.Rb
     nanotubes, 78.67.Ch
     nanowires, 78.67.Uh
     quantum dots, 78.67.Hc
     quantum wells, 78.67.De
     quantum wires, 78.67.Lt
   new topics in, 78.90.+t
   of photonic structures, 78.67.Pt
   of plasma, 52.70.Kz
   of rocks and minerals, 91.60.Mk
   of superconductors, 74.25.Gz
   of supercritical fluids, 78.15.+e
   of superlattices, 78.67.Pt
   of surfaces, 78.68.+m
Optical pumping
   of atoms, 32.80.Xx
   of molecules, 33.80.Be
Optical radars, 42.79.Qx
Optical scanners, 42.79.Ls
Optical sensors, 07.07.Df, 42.79.Pw
Optical storage
   devices, 42.79.Vb
   media, 42.70.Ln
Optical switches, 42.79.Ta
Optical systems, 42.79.-e
   design of, 42.15.Eq
Optical testing, 42.87.-d
Optical tomography, 42.30.Wb
Optical transfer function, 42.30.Lr
Optical waveguides, 42.82.Et
   fiber, 42.81.Qb
   nonfiber, 42.79.Gn
   nonlinear, 42.65.Wi
Optical workshop techniques, 42.86.+b
Optic nerve, 42.66.Ew
Optics. See 42
Optoelectronic devices, 85.60.-q
Optogalvanic spectroscopic methods, 82.80.Kq
Orbits (astronomy)
   comets, 96.25.De
   determination of, 95.10.Eg
   fluid planets, 96.15.De
```

```
solid surface planets, 96.12.De
Order-disorder transitions, 64.60.Cn, 81.30.Hd
   crystallographic aspect, 61.50.Ks
   materials science aspects, 81.30.Hd
   at surfaces and interfaces, 68.35.Rh
Ordovician period, *91.70.fk
Organelles, 87.16.Tb
Organic-inorganic hybrid nanostructures, 81.07.Pr
Organic materials
   absorption and reflection spectra, 78.40.Me
   dielectric properties, 77.84.Jd
   in electrochemistry, 82.45.Wx
   electronic structure, 71.20.Rv
   EPR spectra, 76.30.-v
   fabrication, 81.05.Lg
   infrared and Raman spectra, 78.30.Jw
   noncuprate superconductors, 74.70.Kn
   optical materials, 42.70.Jk
   photoemission and photoelectron spectra, 79.60.Fr
   photoluminescence, 78.55.Kz
   radiation effects, 61.82.Pv
   semiconductors, 81.05.Fb
   superconductors, 74.70.Kn
   structure, 61.66.Hq
   thin films
     conductivity, 73.61.Ph
     optical properties, 78.66.Qn
Organic semiconductors
   conductivity of, 72.80.Le
   in materials science, 81.05.Fb
Organic superconductors, 74.70.Kn
Organisms
   properties of, 87.19.-j
Oscillations
   laser, 42.60.Rn
   plasma, 52.35.-g
   and resonance in neuroscience, 87.19.ln
   seismological, 91.30.Fn
   solar, 96.60.Ly
   stellar, 97.10.Sj
Oscillators
   coupled, 05.45.Xt
```

```
electronic, 84.30.Ng
   optical parametric, 42.65.Yi
Oscillator strengths
   atomic spectra, 32.70.Cs
   molecular spectra, 33.70.Ca
Oscilloscopes, 07.07.Hj
Osmosis, in biological systems, 82.39.Wj
Oxidation
   micro- and nano-oxidation, 81.16.Pr
   phase separation and segregation in, 64.75.Lm
   in surface treatments, 81.65.Mq
Oxides
   dielectric materials, 77.84.Bw
   magnetotransport materials, 75.47.Lx
   phase diagrams of, 81.30.Bx
   refractories, 81.05.Je
   surfaces of, 68.47.Gh
     clusters on oxide surfaces, 68.47.Jn
Ozone layer
   atmospheric chemistry, 82.33.Tb
   global change, 92.70.Cp
Pacific Ocean, 93.30.Pm
Pairing interactions (electronic structure), 71.10.Li
Pairing symmetries (superconductivity), 74.20.Rp
Pair production, 23.20.Ra
Paleoceanography, 92.30.+m, *92.30.-m
Paleoclimatology, 92.60.lv
Paleogene period, *91.70.bg
Paleomagnetism, 91.25.N-, 91.25.Ng
Paleoseismology, 91.30.Za
Paleozoic period, *91.70.F-, 91.70.Fj
Palynology (paleoceanography), *92.30.Wx
Paraelectric films, 77.55.fb
Parallaxes (stellar), 97.10.Vm
Paramagnetic resonance, 76.30.-v
Paramagnetism, 75.20.-g
   local moment in compounds and alloys, 75.20.Hr
   in metals and alloys, 75.20.En
   in nonmetals, 75.20.Ck
Parametric oscillators and amplifiers, optical, 42.65.Yj
Parasitic diseases, 87.19.xe
Pariser-Parr-Pople (PPP) method, (atomic and molecular physics), 31.15.bu
```

```
Parity
   nonconserving transitions (atomic physics), 31.30.jg
   nuclear properties, 21.10.Hw
   symmetry (fields and particles), 11.30.Er
Parkinson's disease, 87.19.xe
Partial differential equations, 02.30.Jr
   in mathematical aspects of biological physics, 87.10.Ed
Particle acceleration
   classical mechanics, 45.50.Dd
   interplanetary space, 96.50.Pw
Particle beams
   intense beams in plasma, 52.59.-f
   plasma heating by, 52.50.Gj
Particle correlations, relativistic collisions, 25.75.Gz
Particle generation (laser-plasma interactions), 52.38.Ph
Particle-in-cell method (plasma simulation), 52.65.Rr
Particle-laden flows, 47.55.Kf
Particle orbits
   classical mechanics, 45.50.Pk
   plasma, 52.20.Dq
   plasma simulation, 52.65.Cc
Particle production (relativistic collisions), 25.75.Dw
Particle-theory models (Early Universe), 98.80.Cq
Passivation
   electrochemistry, 82.45.Bb
   surface treatment, 81.65.Rv
Pastes, 83.80.Hj
Patch clamping in biophysics, 87.80.Jg
Path-integral methods (atomic physics), 31.15.xk
Pattern formation
   in cellular populations, 87.18.Hf
   in chemical kinetics, 82.40.Ck
   in complex systems, 89.75.Kd
   ecological, 87.23.-n
   in fluid dynamics, 47.54.-r
   in granular systems, 45.70.Qj
   in neuroscience, 87.19.lp
Pattern recognition
   acoustics, *43.60.Lq
   optics, 42.30.Sy
Pattern selection (fluid dynamics), 47.54.-r
Pattern transfer techniques
```

```
integrated electronics, 85.40.Hp
   integrated optics, 42.82.Cr
Peierls instability
   electronic conduction, 72.15.Nj
   metal-insulator transitions, 71.30.+h
Penetration depth (superconductivity), 74.25.Ha
Penning discharges, 52.80.Sm
Peptides, 87.14.ef
Perception
   speech, *43.71.-k, 43.71.+m
   visual, 42.66.Si
Percolation
   in phase transitions, 64.60.ah
Peripheral vascular system
   hemodynamics in, 87.19.uj
Permafrost, 92.40.Vq, *92.40.vs
Permanent magnets, 75.50.Ww
Permian period, *91.70.fb
Permittivity, 77.22.Ch
   low-permittivity dielectric films, 77.55.Bh
   high-permittivity capacitive films, 77.55.F-
   high-permittivity gate dielectric films, 77.55.D-
Persistent currents (mesoscopic systems), 73.23.Ra
Personal notes
   in acoustics appendix, *43.10.Eg
   in PACS, 01.60.+q
Perturbation theory, applied to
   atomic physics, 31.15.xp
   classical mechanics, 45.10.Hj
   continuum mechanics, 46.15.Ff
   electronic structure of solids, 71.15.-m
   gauge field theories, 11.15.Bt
   plasma simulation, 52.65.Vv
   quantum chromodynamics, 12.38.Bx, 12.38.Cy
PET, 87.57.uk
Petroleum, 89.30.aj
Petrology, 91.65.-n
   igneous, 91.65.Cq
   metamorphic, 91.65.Kf
   meteorite, 91.65.Sn
   of Moon, 96.20.Dt
   sedimentary, 91.65.Ti
```

```
Phase (electromagnetic fields), 42.50.Dv
Phase coherence
   quantum optics, 42.50.Gy
Phase conjugation, 42.65.Hw
Phase contrast microscopy in biophysics, 87.64.mh
Phase diagrams
   many-electron systems, 71.10.Hf
   metals and alloys, 81.30.Bx
   nonmetallic systems, 81.30.Dz
   superconductivity, 74.25.Dw
   transition temperature variations, 74.62.-c
Phase equilibria, 64.75.-g
   of fluid mixtures, 64.75.Cd
Phase identification (thin films), 68.55.Nq
Phase retrieval (optics), 42.30.Rx
Phase separation and segregation
   in colloids, 64.75.Xc
   in nanoscale systems, 64.75.Jk
   in oxidation, 64.75.Lm
   in polymer blends, 64.75.Va
   in semiconductors, 64.75.Qr
   in solid solutions, 64.75.Nx
   in thin films, 64.75.St
Phase transitions
   in biological systems, 87.15.Zg
   chemical thermodynamics of, 82.60.Fa
   in clusters, 36.40.Ei
   crystallographic aspects of, 61.50.Ks
   displacive, 63.70.+h
   excitonic, 71.35.Lk
   ferroelectric, 77.80.B-
   in finite-size systems, 64.60.an
   fractals in, 64.60.al
   general theory of, 64.60.Bd
   in Langmuir-Blodgett films, 68.18.Jk
   liquid-liquid, 64.70.Ja
   liquid-vapor
     boiling, 64.70.fh
     evaporation/condensation, 64.70.fm
   magnetic, 75.30.Kz
   in nanoscale materials, 64.70.Nd
   networks in, 64.60.aq
```

```
percolation in, 64.60.ah
   quantum Hall effects, 73.43.Nq
   quantum phase transitions, 05.30.Rt
   renormalization-group theory in, 64.60.ae
   rheology, 83.10.Tv
   rocks and minerals, 91.60.Hg
   solid-liquid, 64.70.D-
     crystallization, 64.70.dg
     melting, 64.70.dj
   solid-solid, 64.70.K-, 81.30.-t
   solid-vapor, 64.70.Hz
   in statistical mechanics and thermodynamics, 05.70.Fh
   at surfaces and interfaces, 68.35.Rh
Philosophy of science, 01.70.+w, *43.10.Mq
pH measurement, 82.80.Yc
Phonon-defect interactions, 63.20.kp
Phonon-exciton interactions, 63.20.kk
Phonon-magnon interactions, 63.20.kk
Phonon-phonon interactions, 63.20.kg
Phonons
   in clusters, 63.22.Kn
   dispersion, 63.20.D-
   first-principle theory, 63.20.dk
   in free films, 63.22.Dc
   in graphene, 63.22.Rc
   measurements, 63.20.dd
   in nanoscale materials, 63.22.-m
   in superconductors, 74.25.Kc
   normal modes, 63.20.D-
   photon-phonon interactions, 71.36.+c
   scattering by, 72.10.Di
Phosphorescence
   of atoms, 32.50.+d
   in condensed matter, 78.55.-m
   of molecules, 33.50.Dq
Phosphoric-acid fuel cells (PAFC), 82.47.Pm
Photoacoustic effects, *43.35.Ud, 78.20.Pa
Photoacoustic spectroscopy
   in chemical analysis, 82.80.Kg
   in materials testing, 81.70.Cv
Photocarrier radiometry, 78.56.Cd
Photocathodes, 85.60.Ha
```

```
Photochemistry, 82.50.-m
   control of, 82.50.Nd
   in oceanography, *92.20.ch
   single molecule, 82.37.Vb
Photoconductivity
   bulk matter, 72.40.+w
   thin films, 73.50.Pz
Photodetachment
   atomic ions, 32.80.Gc
   molecules, 33.80.Eh
Photodetectors, 42.79.Pw, 85.60.Gz
   in astronomy, 95.55.Aq
   infrared, 07.57.Kp
   superconducting, 85.25.0j
Photodiodes, 85.60.Dw
Photodissociation
   of biomolecules, 87.15.mk
   of molecules, 33.80.Gj
   in photochemistry, 82.50.-m
   pump-probe studies (femtochemistry), 82.53.Eb
Photodynamic therapy, 87.50.wp
Photoelastic effects, 78.20.hb
Photoelectric energy conversion, 84.60.Jt
Photoelectrochemical cells, 82.47.Jk
Photoelectrochromic storage devices, 82.47.Jk
Photoelectron microscopy, 68.37.Xy
Photoelectron spectroscopy
   in biophysics, 87.64.ks
   in chemical analysis, 82.80.Pv
   of molecules, 33.60.+q
   of solids and liquids, 79.60.-i
Photoemission
   adsorbed layers, 79.60.Dp
   disordered structures, 79.60.Ht
   heterostructures, 79.60.Jv
   insulators, 79.60.Bm
   interfaces, 79.60.Jv
   liquids, 79.60.Cn
   nanostructures, 79.60.Jv
   organic materials, 79.60.Fr
   polymers, 79.60.Fr
   semiconductors, 79.60.Bm
```

```
thin films, 79.60.Dp
Photofission, 25.85.Jg
Photogrammetry, 91.10.Lh
Photography, 07.68.+m
   astronomical applications of, 95.75.De
Photoionization
   of atoms, 32.80.Fb
     inner-shell ionization, 32.80.Aa
     multiphoton ionization, 32.80.Rm
   of biomolecules, 87.15.mn
   of molecules, 33.80.Eh
     multiphoton ionization, 33.80.Rv
   photochemical reactions, 82.50.-m
Photolithography, 85.40.Hp
Photoluminescence
   of alkali halides, 78.55.Fv
   of amorphous and disordered materials, 78.55.Qr
   of glasses, 78.55.Qr
   of inorganic solids, 78.55.Hx
   of liquids, 78.55.Bq
   of organic solids, 78.55.Kz
   of porous materials, 78.55.Mb
   of semiconductors
     elemental semiconductors, 78.55.Ap
     II-VI semiconductors, 78.55.Et
     III-V semiconductors, 78.55.Cr
Photolysis, 82.50.-m
Photometers, 07.60.Dq
   in astronomy, 95.55.Qf, 95.75.De
Photomultipliers, 85.60.Ha
   in nuclear physics, 29.40.-n
Photon-atom interactions, 32.80.-t
   coherent control of, 37.10.Jk
   effects of atomic coherence, 42.50.Gy
Photon counting and statistics, 42.50.Ar
Photon echoes
   in quantum optics, 42.50.Md
   in ultrafast pump/probe spectroscopy, 78.47.jf
Photon-hadron scattering, 13.60.-r
Photonic band gap materials, 42.70.Qs
Photonic crystal lasers, 42.55.Tv
Photonic switching, 42.65.Pc
```

```
Photon molecule interactions, 33.80.-b
Photons
   interactions with hadrons, 13.60.-r
   nonclassical states, 42.50.Dv
   photon-magnon interactions, 71.36.+c
   production
     in hadron-induced high-energy interactions, 13.85.Qk
     in relativistic heavy-ion collisions, 25.75.Cj
   properties of, 14.70.Bh
   solar, 96.60.Tf
Photon statistics, 42.50.Ar
Photon-stimulated desorption, 68.43.Tj, 79.20.La
Photonuclear reactions, 25.20.-x
Photoproduction
   of baryons, 13.60.Rj
   of mesons, 13.60.Le
   nuclear, 25.20.Lj
Photopyroelectric effects, 78.20.nc
Photorefractive effect
   in nonlinear optics, 42.65.Hw
   in optical properties, 78.20.Mg
   optical materials for, 42.70.Nq
Photoresistors, 84.32.Ff, 85.60.Dw
Photoresists, 85.40.Hp
Photosphere
   solar, 96.60.Mz
   stellar, 97.10.Ex
Photosynthesis
   in biomass conversion, 88.20.jr
   in oceanography, 92.20.Cm, *92.20.ch
   in photochemistry, 82.50.-m
Photothermal effects, 78.20.nb
   deep-level photothermal spectroscopy, 79.10.na
Phototransistors, 85.60.Dw
Phototubes, 85.60.Ha
Photovoltaic effect
   bulk matter, 72.40.+w
   thin films, 73.50.Pz
Photovoltaics
   cost of production, 88.40.hm
   efficiency and performance of, 88.40.hj
   types of
```

```
multijunction solar cells, 88.40.jp
     organic photovoltaics, 88.40.jr
     silicon solar cells, 88.40.jj
     thin film III-V and II-VI solar cells, 88.40.jm
     thin film Cu-based I-III-V12, 88.40.jn
Physics careers, 01.85.+f
Physics education, 01.40.-d
   classroom materials, errors in, 01.50.Zv
   curricula and evaluation, 01.40.G-
   educational aids, 01.50.-i
     audio and visual aids, 01.50.F-
     computers in education, 01.50.H-, 01.50.Lc
     demonstration experiments, 01.50.My
     laboratory experiments, 01.50.Pa
   teacher training, 01.40.J-
   teaching methods, 01.40.gb
Physics laboratory manuals
   secondary schools, 01.30.la
   undergraduate schools, 01.30.lb
Physics literature and publications, 01.30.-y
Physics organizational activities, 01.10.Hx
Physics tournaments, 01.50.Rt
Physiological acoustics, *43.64.-q, 43.64.+r
Physiological materials and systems
   rheology of, 83.80.Lz, 87.19.rh
Physiological optics, 42.66.-p
Physisorption, 68.43.-h
Picosecond techniques
   in laboratory procedures, 06.60.Jn
   in nonlinear optics, 42.65.Re
   in spectroscopy of solid state dynamics, 78.47.D-
Piezoelectric films, 77.55.H-
   AIN films, 77.55.hd
   PZT films, 77.55.hj
   ZnO films, 77.55.hf
Piezoelectricity, 77.65.-j
    piezoelectric constants, 77.65.Bn
   piezoelectric devices, 85.50.-n
   piezoelectric materials, 77.84.-s
   piezoelectric films, 77.55.H-
   strain-induced fields, 77.65.Ly
Piezo-optical effects, 78.20.H-, 78.20.hb
```

```
laser ultrasonics in study of, 78.20.hc
Piezoresistance
   in semiconductors and insulators, 72.20.Fr
   in thin films, 73.50.Dn
Pinch devices, 52.58.Lq
Pion absorption and capture, 25.80.Gn, 25.80.Ls
Pion decays, 13.20.Cz, 13.25.Cq
Pions
   in astronomical observations, 95.85.Ry
   detectors (astronomy), 95.55.Vj
   pion-baryon reactions, 13.75.Gx
   pion-induced nuclear reactions, 25.80.-e
Pipe flow, 47.60.-i
Pipelines, 93.85.Tf
Pitch, *43.66.Hg
Planetary bow shocks, 96.50.Fm
Planetary nebulae, 98.38.Ly, 98.58.Li
Planetary rings, 96.30.Wr
   fluid planets, 96.15.Uv
   solid surface planets, 96.12.Uv
Planets
   dwarf, 96.30.lz
   extrasolar, 97.82.-j
   fluid planets
     atmosphere, *96.15.H-, 96.15.Hy
     interiors, 96.15.Nd
     orbits and rotation, 96.15.De
     origin and evolution, 96.15.Bc
     polar regions, 96.15.Xy
     rings, 96.15.Uv
     surfaces, 96.15.Lb
     tidal forces, 96.15.Wx
   interaction with solar wind, 96.50.Ek
   Jupiter, 96.30.Kf
   Mars, 96.30.Gc
   Mercury, 96.30.Dz
   Neptune, 96.30.Rm
   Pluto, 96.30.Sn
   probes for, 95.55.Pe
   Saturn, 96.30.Mh
   solid surface planets
     atmosphere, *96.12.J-, 96.12.Jt
```

formation of, 96.12.Bc interiors, 96.12.Pc orbits and rotation, 96.12.De polar regions, 96.12.Qr rings, 96.12.Uv surfaces, \*96.12.K-, 96.12.Kz volcanism, 96.12.Xy

Uranus, 96.30.Pj

Venus, 96.30.Ea

Plane-wave method, 71.15.Ap

Plankton, 92.20.Jt, \*92.20.jf, \*92.20.jh

Plant ecology, 92.40.0j

biogeosciences, \*91.62.Mn

hydrology, 92.40.Oj

Plasma antennas, 52.40.Fd

Plasma applications, 52.77.-j

Plasma confinement

magnetic, 52.55.-s

nonmagnetic, 52.58.-c

Plasma crystals, 52.27.Lw

Plasma density, 52.25.-b

ionosphere, 94.20.Fg

Plasma devices, 52.75.-d

Plasma diagnostics, 52.70.-m

Plasma diodes, 52.75.Fk

Plasma dynamics, 52.30.-q

Plasma dynamos, 47.65.Md

Plasma etching, 52.77.Bn

Plasma flow, 52.30.-q

ionospheric, 94.20.wc

Plasma focus devices, 52.58.Lq

Plasma gyrokinetics, 52.30.Gz

Plasma heating, 52.50.-b

Plasma impurities, 52.25.Vy

Plasma instabilities, 52.35.-g

Plasma interactions, nonlaser, 52.40.-w

Plasma-material interactions, 52.40.Hf

ion implantation and deposition, 52.77.Dq

Plasma production, 52.50.-b

Plasma propulsion, 52.75.Di

Plasma reactions, 82.33.Xi

Plasmas

```
astrophysical, 95.30.Qd
   dusty, 52.27.Lw
   electron-positron, 52.27.Ep
   elementary processes in, 52.20.-j
   high-current, 52.77.Fv
   high-pressure, 52.77.Fv
   ionospheric, 94.20.wc, 94.20.wf
   magnetized, 52.25.Xz
   magnetohydrodynamics of, 52.30.-q
   magnetospheric, 94.30.cq, 94.30.cs
   multicomponent, 52.27.Cm
   neutrals in, 52.25.Ya
   non-neutral, 52.27.Jt
   quark-gluon, 12.38.Mh
   relativistic, 52.27.Ny
   sheaths, 52.40.Kh
   single-component, 52.27.Aj
   solid-state, 72.30.+q, 73.50.Mx
Plasma simulation, 52.65.-y
Plasma sources, 52.50.Dg
Plasmasphere, 94.30.cv
Plasma spraying, 81.15.Rs
Plasma switches, 52.75.Kq
Plasma torches, 52.75.Hn
Plasma turbulence, 52.35.Ra
   space plasma, 94.05.Lk
Plasma waves, 52.35.-g
   drift waves, 52.35.Kt
   electrostatic waves and oscillations, 52.35.Fp
   in interplanetary space, 96.50.Tf
   in ionosphere, 94.20.wf
   in magnetosphere, 94.30.cq
   shock waves, 52.35.Tc
Plasmons
   in bulk matter, 71.45.Gm
   in clusters, 36.40.Gk
   on surfaces and interfaces, 73.20.Mf
Plasticity, 62.20.fq
   continuum mechanics of, 46.35.+z
   materials treatment effects on, 81.40.Lm
   in neuroscience, 87.19.lw
   rheology of, 83.50.-v
```

```
Plastics
   bioproduct from biomass, 88.20.rb
   preparation of, 81.05.Lg
   structure of, 61.41.+e
Plates
   structural acoustics of, *43.40.Dx
   structural mechanics of, 46.70.De
Plate tectonics, *91.45.D-, 91.45.Dh
   dynamics and mechanics of, *91.45.G-, 91.45.Ga
     lithospheric dynamics, *91.45.gf
     seismotectonics, *91.45.gd
   plate motions, past, *91.45.dg
   plate motions, recent, *91.45.dk
Pluto, 96.30.Sn
   Plutonian satellites, 96.30.Up
Pluton emplacement (structural geology), 91.55.Sn
Plutonium generation, 28.50.Ft
Pneumatic machinery, 47.85.Kn
Pneumodynamics, 87.19.Wx
p-n junctions, 73.40.-c
(p,n) reactions, 25.40.Kv
Pnictides (non-cuprate superconductors), 74.70.Xa
Pockels effect, 78.20.Jq
Poincar� invariance, 11.30.Cp
Point contacts
   nanocontacts, fabrication of, 81.07.Lk
   point contact devices, 85.30.Hi
Point defects, 61.72.J-
Poiseuille flow, 83.50.-v
Poisson equation, 41.20.Cv
Poisson ratio
   effects of materials treatments on, 81.40.Jj
   in mechanical properties of solids, 62.20.dj
Polar cap
   ionosphere, 94.20.dk
   magnetosphere, 94.30.cx
Polarimeters, 07.60.Fs
   in astronomy, 95.55.Qf, 95.75.Hi
Polaritons, 71.36.+c
Polarizability
   of atoms, 32.10.Dk
   of molecules, 33.15.Kr
```

```
Polarization
   in atmospheric optics, 42.68.Mj
   dielectric properties, 77.22.Ej
   dynamic nuclear, 76.70.Fz
   in nuclear reactions, 24.70.+s
   in optical fibers, 42.81.Gs
   in particle interactions, 13.88.+e
   of starlight, 97.10.Ld
   in wave optics, 42.25.Ja
Polarized beams
   electron and positron (atomic collisions), 34.80.Nz
   in particle accelerators, 29.27.Hj
Polarized ion sources, 29.25.Lg
Polarized targets, 29.25.Pj
Polarizers, optical, 42.79.Ci
Polarons
   in electronic structure of solids, 71.38.-k
   nonconventional mechanisms in superconductivity, 74.20.Mn
Polar regions, 93.30.Sq
   meteorology, 92.60.Uy
Polar wobble, 91.10.Nj
Polishing
   in optical workshop techniques, 42.86.+b
   in surface treatments, 81.65.Ps
Pollen and spores, *92.30.Wx
Pollution
   atmospheric, 92.60.Sz
   effects on instruments, 07.89.+b
   environmental regulations of, 89.60.Fe
   instruments for measurement of, 07.88.+y
   land (biogeosciences), *91.62.Rt
   marine, 92.20.Ny
Polyatomic molecules, electron correlation in, 31.15.vq
Polyelectrolytes, 82.35.Rs
   in electrochemistry, 82.45.Wx
Polymer blends
   structure of, 61.25.hk
Polymer blends (rheology), 83.80.Tc
Polymer cross linking, 61.25.hp
Polymer-electrolyte fuel cells (PEFC), 82.47.Nj
Polymerization, 82.35.-x
   of biomolecules, 82.35.Pq, 87.15.rp
```

```
Polymer melts, 83.80.Sg
   structure of, 61.25.hk
Polymer molecules, 36.20.-r
Polymer processing flows, 47.85.md
Polymer reactions, 82.35.-x
Polymers
   absorption and reflection spectra of, 78.40.Me
   chemical reactions of, 82.35.-x
   dielectric properties of, 77.84.Jd
   elastomeric, 83.80.Va
   electrical conductivity of, 72.80.Le
   in electrochemistry, 82.45.Wx
   electronic structure of
     condensed matter, 71.20.Rv
     molecules, 36.20.Kd
   film growth, 68.55.am
   flow properties, 47.57.Ng
   glass transitions in, 64.70.pj
   infrared and Raman spectra of, 78.30.Jw
   nanoparticles in, 82.35.Np
   nonelectronic thermal conduction in, 66.70.Hk
   nonlinear optics with, 82.35.Ej
   as optical materials, 42.70.Jk
   photoemission and photoelectron spectra of, 79.60.Fr
   physical properties of, 82.35.Lr
   preparation of, 81.05.Lg
   radiation effects of, 61.82.Pv
   reinforced, 81.05.Qk
   rheology of, 83.80.-k
   self-diffusion and ionic conduction in, 66.30.hk
   solid-solid transitions, 64.70.km
   solid surfaces of, 68.47.Mn
   structure of
     condensed phase, 61.41.+e
     molecular, 36.20.-r
   on surfaces, 68.47.Pe, 82.35.Gh
   surface structure of, 68.35.bm
   thin films
     electrical properties of, 73.61.Ph
     optical properties of, 78.66.Qn
Polymer solutions
   flow properties, 47.57.Ng
```

```
rheology of, 83.80.Rs
   structure of, 61.25.he
Polymer swelling, 61.25.hp
Polymorphic transformations
   crystallographic aspects of, 61.50.Ks
   materials science aspects of, 81.30.Hd
Pomeranchuk poles, 11.55.Jy, 12.40.Nn
Ponderomotive effects, in plasmas, 52.35.Mw
Population dynamics (ecology), 87.23.Cc
Population inversion, 32.80.Xx, 33.80.Be, 42.50.-p
Porous materials
   chemical reactions in, 82.33.Ln
   fabrication of, 81.05.Rm
   flow through, 47.56.+r
   heat transfer in, 44.30.+v
   photoluminescence of, 78.55.Mb
   structure of, 61.43.Gt
Position-sensitive detectors, 29.40.Gx
Positron annihilation, 78.70.Bj
Positron-atom interactions, 34.80.-i
Positron beams
   nonrelativistic, 41.75.Fr
   relativistic, 41.75.Ht
Positron emission, 79.20.Mb
Positron emission tomography (PET), 87.57.uk
Positronium, 36.10.Dr
   in chemical reactions, 82.30.Gg
   formation in atomic and molecular collisions, 34.80.Lx
Positron microscopes, 07.78.+s
Positron-molecule interactions, 34.80.-i
Positrons
   properties of, 14.60.Cd
   radiation damage by, 61.80.Fe
   states (electronic structure of solids), 71.60.+z
Positron scattering
   in atomic and molecular collisions, 34.80.Uv
     positronium formation, 34.80.Lx
   in nuclear reactions, 25.30.Hm
Posters, educational, 01.50.fh
Potential energy surfaces
   for chemical kinetics, 82.20.Kh
   of excited electronic states, 31.50.Df
```

```
of ground electronic states, 31.50.Bc
   in molecular collisions, 34.20.-b
   surface crossings in, 31.50.Gh
Potential flows, 47.15.km
Potential models, 12.39.Pn
Potentials
   atom molecule, 34.20.Gj
   interatomic, 34.20.Cf
   intermolecular, 34.20.Gj
Potential theory (mathematics), 02.30.Em
Potts models
   in lattice theory and statistics, 05.50.+q
   in magnetism (classical spin models), 75.10.Hk
Powder diffraction
   neutron, 61.05.fm
   x-ray, 61.05.cp
Powder metallurgy, 81.20.Ev
Powders
   processing of, 81.20.Ev
   structure of, 61.43.Gt
   superconducting, 74.81.Bd
Power reactors, 28.50.Hw
Power supply circuits, 84.30.Jc
Power systems
   biopower systems, 88.20.M-
   high-current and high-voltage systems, 84.70.+p
   power electronics, 84.30.Jc
   superconducting high-power technology, 84.71.-b
   transmission lines and cables, 84.70.+p
      effects on biological systems, 87.50.C-
(p, \ddot{i}, \frac{1}{2}) reactions, 25.40.Qa
Precambrian period, *91.70.H-, 91.70.Hm
Precipitation
   of energetic particles (magnetosphere), 94.30.Ny
   hydrology of, *92.40.E-, 92.40.Ea
   in materials synthesis, 81.20.Fw
   in meteorology, 92.60.Jq, *92.60.jf
   of particles (ionosphere), 94.20.Qq
   in phase transformations, 81.30.Mh
   in solidification, 81.30.Mh
Precipitation hardening, 81.40.Cd
Predissociation, 33.80.Gj
```

```
Pressure effects
   on crystal structure, 61.50.Ks
   in materials treatment, 81.40.Vw
   on rocks and minerals, 91.60.Gf
   in solids and liquids, 62.50.-p
   on superconducting transition temperature, 74.62.Fj
Pressure sensors, 07.07.Df
Pressure treatment of materials, 81.40.Vw
Primordial galaxies, 98.54.Kt
Prisms, 42.79.Bh
Probability theory, 02.50.Cw
Probes, lunar and planetary, 95.55.Pe
Projective geometries, 02.40.Dr
Prominence eruptions, solar, 96.60.qf
Propane as fuel for advanced vehicles, 88.85.md
Proportional counters, 29.40.Cs
Propulsion
   magnetic devices for, 85.70.Rp
   plasma, 52.75.Di
   reactors, 28.50.Ky
Protein-ligand interactions, 87.15.kp
Protein-membrane interactions, 87.15.kt
Protein-nucleotide interactions, 87.15.kj
Protein-protein interactions, 87.15.km
Proteins, 87.14.E-
   enzymes, 87.14.ej
   fibrils, 87.14.em
   membrane proteins, 87.14.ep
   models of, 87.14.et
   motor, 87.16.Nn
   peptides, 87.14.ef
Protein-solvent interactions, 87.15.kr
Proteomics, 87.18.Xr
   techniques in biotechnology, 87.80.Un, 87.85.mk
Proteomic techniques, 87.80.Un
Proterozoic period, *91.70.hc
Protogalaxies, 98.54.Kt
Proton absorption, 25.40.Lw
Proton dosimetry, 87.53.Bn
Proton exchange membrane (PEM) fuel cells, 82.47.Gh
Proton-hyperon interactions, 13.75.Ev, 13.85.-t
Proton-neutron interactions, 13.75.Cs, 13.85.-t
```

Proton-nucleus reactions, 25.40.-h

Proton-pion interactions, 13.75.Gx, 13.85.-t

Proton-proton interactions, 13.75.Cs, 13.85.-t

Proton radiative capture, 25.40.Lw

Protons, properties of, 14.20.Dh

Proton scattering (nuclear reactions)

elastic, 25.40.Cm

inelastic, 25.40.Ep

Protostars, 97.21.+a

Proximity effects (superconductivity), 74.45.+c

Pseudopods, 87.16.Qp

Pseudopotential method (electronic structure of solids), 71.15.Dx

Psychological acoustics, \*43.66.-x, 43.66.+y

Publications in electronic media, 01.30.Xx

Publisher's note, 99.10.Fg

Pulmonary fluid mechanics, 47.63.Ec

hemodynamics and pneumodynamics, 87.19.U-, 87.19.Wx

Pulsars, 97.60.Gb

Pulse circuits, 84.30.Sk

Pulse compression (optical), 42.65.Re

Pulse generators, 84.30.Ng

Pulse sequences, in NMR, 82.56.Jn

Pulse sequences in MRI, 87.61.Hk

Pump-probe spectroscopy

in femtochemistry, 82.53.Eb, 82.53.Hn

in ultrafast solid state dynamics, 78.47.J-

Pumps, vacuum, 07.30.Cy

Purification (materials), 81.20.Ym

Pyroelectric devices, 85.50.-n

Pyroelectric effects, 77.70.+a

Pyroelectric films, 77.55.Kt

Pyrolysis, 82.30.Lp

Pyrometers, 07.20.Ka

PZT ceramics, 77.84.Cg

PZT films (dielectric films), 77.55.fg, 77.55.hj

QED corrections

to electronic structure of atoms and molecules

electric dipole moments, 31.30.jn

long-range interactions, 31.30.jh

muonic hydrogen and deuterium, 31.30.jr

parity nonconserving transitions, 31.30.jg

Q-switching, 42.60.Gd

164 of 219

```
Quadrupole magnets
   particle beam focusing, 41.85.Lc
Quadrupole moments, 21.10.Ky, 33.15.Kr
Quadrupole resonance, 76.60.Gv
Quality assurance
   for radiation therapy equipment, 87.56.Fc
   in treatment strategy, 87.55.Qr
Quantized fields, 03.70.+k
Quantized spin models, 75.10.Jm
Quantum acoustics, *43.35.-c, 43.35.+d
Quantum algorithms and protocols
   quantum information, 03.67.Ac
Quantum beats
   in quantum optics, 42.50.Md
   in ultrafast pump/probe spectroscopy, 78.47.jm
Quantum chromodynamics, 12.38.-t
   in nuclei, 24.85.+p
Quantum communication, 03.67.Hk
Quantum computation, 03.67.Lx
Quantum cosmology, 98.80.Qc
Quantum critical phenomena (superconductivity), 74.40.Kb
Quantum cryptography, 03.67.Dd
Quantum crystals, 67.80.-s
Quantum dots
   devices, 85.35.Be
   electronic transport in, 73.63.Kv
   electron states and collective excitations in, 73.21.La
   fabrication of, 81.07.Ta
   magnetic properties of, 75.75.-c
   structure and nonelectronic properties of, 68.65.Hb
Quantum electrodynamics (QED)
   of cavities (quantum optics), 42.50.Pq
   corrections to electronic structure of atoms and molecules, 31.30.J-
   in particle physics, 12.20.-m
Quantum ensemble theory, 05.30.Ch
Quantum entanglement, 03.65.Ud
Quantum field theory, 03.70.+k, 11.10.-z
Quantum fluctuations, 42.50.Lc
Quantum fluids
   boson degeneracy in, 67.10.Ba
   fermion degeneracy in, 67.10.Db
   hydrodynamics in, 67.10.Jn
```

```
structure and dynamics of, 67.10.Hk
   transport processes in, 67.10.Jn
Quantum geometry, 04.60.Pp
Quantum gravity, 04.60.-m
Quantum groups, 02.20.Uw
Quantum Hall effects, 73.43.-f
Quantum information, 03.67.-a
   entanglement production, 03.67.Bg
   optical implementations, 42.50.Ex
   quantum algorithms and protocols, 03.67.Ac
Quantum interference devices
   semiconductor, 85.35.Ds
   superconducting, 85.25.Dq
Quantum jumps, 42.50.Lc
Quantum localization
   in metals and alloys, 72.15.Rn
   on surfaces and interfaces, 73.20.Fz
Quantum mechanics, 03.65.-w
   optical tests of, 42.50.Xa
Quantum noise, 42.50.Lc
Quantum nonlocality, 03.65.Ud
Quantum optics, 42.50.-p
Quantum phase transitions, 64.70.Tg, 05.30.Rt
Quantum solids
   diffusion in, 66.30.Ma
   solid <sup>3</sup>He, 67.80.D-
   solid <sup>4</sup>He, 67.80.B-
     interfaces, 67.80.bf
   solid hydrogen, 67.80.F-
   supersolids, 67.80.K-
Quantum statistical mechanics, 05.30.-d
   of quantum fluids, 67.10.Fj
Quantum tomography, 03.65.Wj
Quantum tunneling
   of defects, 66.35.+a
   macroscopic in magnetic systems, 75.45.+j
Quantum systems with finite Hilbert space, 03.65.Aa
Quantum wells
   devices, 85.35.Be
   electronic transport in, 73.63.Hs
   electron states and collective excitations in, 73.21.Fg
   fabrication of, 81.07.St
```

```
magnetic properties of, 75.75.-c
   optical properties of, 78.67.De
   structure and nonelectronic properties of, 68.65.Fg
Quantum wires
   devices, 85.35.Be
   electronic transport in, 73.63.Nm
   electron states and collective excitations in, 73.21.Hb
   fabrication of, 81.07.Vb
   optical properties of, 78.67.Lt
   structure and nonelectronic properties of, 68.65.La
Quantum Zeno dynamics, 03.65.Xp
Quark confinement, 12.38.Aw
Quark deconfinement, 25.75.Nq
Quark-gluon plasma, 12.38.Mh
   phase transitions in, 25.75.Nq
   production of, 25.75.Ng
Quark matter
   nuclear matter, 21.65.Qr
Quark models, 12.39.-x
Quarkonia
   heavy quarkonia, 14.40.Pq
   decays of
     hadronic, 13.25.Gv
     leptonic and semileptonic, 13.20.Gd
Quarks
   bottom quarks, 14.65.Fy
   charmed quarks, 14.65.Dw
   fourth generation quarks, 14.65.Jk
   in nuclei and nuclear processes, 24.85.+p
   light quarks, 14.65.Bt
   masses and mixing (electroweak interactions), 12.15.Ff
   top quarks, 14.65.Ha
Quartz, optical material, 42.70.Ce
Quartz resonator, 77.65.Fs
Quasars, 98.54.Aj
   absorption- and emission-line systems, 98.62.Ra
Quasicrystals
   electronic structure of, 71.23.Ft
   in magnetic materials, 75.50.Kj
   structure of, 61.44.Br
Quasiparticle methods (atomic physics), 31.15.xm
Quenching (fluorescence)
```

```
atoms, 32.50.+d
   condensed matter, 78.55.-m
   molecules, 33.50.Hv
Quenching (thermal), 81.40.Gh
Quantum information
   quantum algorithms and protocols, 03.67.Ac
Radar, 84.40.Xb
Radiation belts, 94.30.Xy
Radiation chemistry, 82.50.-m
Radiation detectors, 07.57.Kp, 29.40.-n, 85.25.Pb
Radiation effects
   on biological systems, 87.50.-a, 87.53.-j
   on instruments, 07.89.+b
   on optical elements, devices and systems, 42.88.+h
   in solids, 61.80.-x
Radiation fields, 04.40.Nr
Radiation hardening, 81.40.Wx
Radiation monitoring in
   in treatment strategy (medical physics), 87.55.N-
Radiation pressure
   acoustical, *43.25.Qp
   on atoms and molecules, 37.10.Vz, 42.50.Wk
   optical, 42.50.Wk
Radiation sources (medical physics), 87.56.B-
   accelerators, 87.56.bd
   radioactive sources, 87.56.bg
Radiation therapy
   electromagnetic and acoustic fields in, 87.50.-a
   equipment for, 87.56.-v
   ionizing radiations in, 87.53.-j
   treatment strategy in, 87.55.-x
Radiation therapy equipment, 87.56.-v
   for beam intensity modifications, 87.56.N-
     collimators, 87.56.nk
     wedges and compensators, 87.56.ng
   for collimation, 87.56.J-
     field shaping, 87.56.jk
     field size, 87.56.jf
   radiation sources for, 87.56.B-
     accelerators, 87.56.bd
     radioactive sources, 87.56.bg
Radiation treatment
```

```
of materials, 81.40.Wx
   in medical physics, 87.55.-x
Radiative capture of nucleons, 25.40.Lw
Radiative corrections
   atoms and molecules, 31.30.jf
   electromagnetic, 13.40.Ks
   electroweak, 12.15.Lk
Radiative flows, 47.70.-n
Radiative recombination, 78.60.-b
Radiative transfer
   in astrophysics, 95.30.Jx
   in atmosphere, 42.68.Ay, 92.60.Vb
   in heat transfer, 44.40.+a
   stellar, 97.10.Ex
Radioactive beams, 29.38.-c
Radioactive dating, 93.85.Np
Radioactive decay. See 23
Radioactive pollution, 89.60.-k
Radioactive sources, 29.25.Rm
   in medical physics, 87.56.bg
Radioactive wastes, 28.41.Kw
   accelerator-driven transmutation of, 28.65.+a
Radioactivity
   methods in exploration geophysics, 93.85.Np
   in minerology and petrology, 91.65.Dt
   oceanic, 92.20.Td
   radiogenic isotope geochemistry, 91.67.Qr
Radioastronomy, 95.85.Bh, 95.85.Fm
Radiochemical activation analysis, 82.80.Jp
Radio-frequency spectra
   atoms, 32.30.Bv
   molecules, 33.20.Bx
Radio galaxies, 98.54.Gr
Radiolysis, 82.50.Kx
Radiometers, 07.60.Dq
Radiopharmaceuticals, 87.57.un
Radiosurgery, 87.53.Ly
Radio telescopes, 95.55.Jz
Radiowave radiation
   astronomical observations, 95.85.Bh
   effects on biological systems, 87.50.S-
   interactions with condensed matter, 78.70.Gq
```

```
in plasma, 52.25.Os
   in plasma diagnostics, 52.70.Gw
   plasma heating with, 52.50.Qt
   sources, galactic and extragalactic, 98.70.Dk
   wave propagation of, 41.20.Jb, 84.40.-x
Radiowave receivers and detectors, 07.57.Kp
Radiowave sources, nonastronomical, 07.57.Hm
Radiowave spectrometers, 07.57.Pt
Radiowave technology, 84.40.-x
Rain, 92.40.Ea, *92.40.eg, *92.60.jf
Raman lasers, 42.55.Ye
Raman scattering, in plasmas, 52.38.Bv
Raman spectra
   of disordered solids, 78.30.Ly
   of fullerenes, 78.30.Na
   of insulators, 78.30.Am
   of liquids, 78.30.C-
     inorganic liquids, 78.30.cc
     ionic liquids, 78.30.cd
     organic liquids, 78.30.cb
     solutions, 78.30.cd
   of macro- and polymer molecules, 36.20.Ng
   of metals and alloys, 78.30.Er
   of molecules, 33.20.Fb
   of nonmetallic inorganics, 78.30.Hv
   of organic solids, 78.30.Jw
   of polymers, 78.30.Jw
   of semiconductors
     III-V, and II-VI semiconductors, 78.30.Fs
   elemental semiconductors, 78.30.Am
Raman spectroscopy
   in biophysics, 87.64.kp
   CARS, 42.65.Dr
   in chemical analysis, 82.80.Gk
   Raman lasers, 42.55.Ye
   stimulated Raman scattering, 42.65.Dr
Random lasers, 42.55.Zz
Random media (continuum mechanics), 46.65.+g
Random-phase approximation (nuclear structure), 21.60.Jz
Random processes, 05.40.-a
Random walks, 05.40.Fb
Range finders
```

```
acoustical (sonar), *43.30.Vh, *43.30.Wi
   optical, 42.79.Qx
Rare earth metals and alloys
   electric conductivity of, 72.15.Eb
   electronic structure of, 71.20.Eh
Rarefied gas dynamics, 47.45.-n
Rate constants (chemical kinetics), 82.20.Pm
   correlation function theory of, 82.20.Sb
   quantum effects in, 82.20.Xr
   stochastic theories of, 82.20.Uv
Rayleigh scattering
   in condensed matter, 78.35.+c
   in molecules, 33.20.Fb
   in plasmas, 52.38.Bv
   stimulated Rayleigh scattering, 42.65.Es
Rayleigh-Taylor instabilities, 52.35.Py
Ray tracing
   acoustical, *43.20.Dk
     in water, *43.30.Cq
   optical, 42.15.Dp
Reaction kinetics
   of biomolecular reactions, 87.15.R-
   chemical reactions, 82.20.-w
   single molecule reactions, 82.37.-j
   of biological systems, 82.39.-k
   special regimes in chemical reactions, 82.40.-g
Reactive flows, 47.70.-n
Reactor materials
   for fusion reactors, 28.52.Fa
   structural and shielding materials
     fission reactors, 28.41.Qb
Reactors
   chemical, 82.40.Bj
   fission, 28.41.-i, 28.50.-k
   fusion, 28.52.-s
Reactor safety
   fission reactors, 28.41.Te
   fusion reactors, 28.52.Nh
Recombination
   radiative, 78.60.-b
   in semiconductors, 72.20.Jv
   in thin films, 73.50.Gr
```

```
Record and verify systems
   in treatment strategy (medical physics)
      applications of, 87.55.tm
     design of, 87.55.tg
Recording media
   holographic, 42.40.Ht
   magnetic, 85.70.Kh, 85.70.Li
Recrystallization
   in crystal growth, 81.10.Jt
   materials treatment effects on, 81.40.Ef
Red shift, 98.62.Py
Reflection and refraction, 42.25.Gy
Reflection coefficients, 78.20.Ci
Reflection high energy electron diffraction (RHEED)
   in structure determination, 61.05.jh
Reflection spectra, 78.40.-q
Reflectometers, 07.60.Hv
Reflectors, optical, 42.79.Fm
Refractive index, 78.20.Ci
Refractometers, 07.60.Hv
Refractories (materials synthesis), 81.05.Je, 81.05.Mh
Refrigeration, 07.20.Mc
Regge theory
   S-matrix theory, 11.55.Jy
   strong interactions, 12.40.Nn
Regulatory biology
   in biomedical engineering, 87.85.Xd
Regulatory issues
   in radiation safety, 87.55.N-
Regulatory networks
   in subcellular structure and processes, 87.16.Yc
R-hadrons, 14.80.Pq
Reinforced materials
   composites, 81.05.Ni
   polymers, 81.05.Qk
Relativistic astrophysics, 95.30.Sf, 98.80.Jk
Relativistic corrections
   to atomic structure, 31.30.jc
   in band structure calculations, 71.15.Rf
   due to negative-energy states, 31.30.jd
Relativistic electron beams, 41.75.Ht
Relativistic fluid dynamics, 47.75.+f
```

```
Relativistic heavy-ion collisions, 25.75.-q
   global features in, 25.75.Ag
   hard scattering in, 25.75.Bh
   heavy quark production in, 25.75.Cj
Relativistic models (nuclear reactions), 24.10.Jv
Relativistic plasmas, 52.27.Ny
Relativistic scattering theory, 11.80.-m
Relativistic stars, 04.40.Dg
Relativistic wave equations, 03.65.Pm
Relativity
   general relativity
     approximation methods, equations of motion, 04.25.-g
         numerical relativity, 04.25.D-
     classical, 04.20.-q
   special relativity, 03.30.+p
Relaxation processes
   in chemical kinetics, 82.20.Rp
   in dielectrics, 77.22.Gm
   in electrical conductivity (metals and alloys), 72.15.Lh
   in electron spin resonance, 76.30.-v
   in muon spin rotation, 76.75.+i
   in nuclear magnetic resonance
     molecules, 33.25.+k
     condensed matter, 76.60.-k
      physical chemistry, 76.60.-k
   in quantum optics, 42.50.Hz
   ultrasonic, *43.35.Fj
Relaxor ferroelectrics, 77.80.Jk
Relays, 84.32.Dd
Remagnetization (geomagnetism), 91.25.Ux
Remote sensing, 07.07.Df
   acoustic, *43.30.Pc, *43.60.Rw
   in astronomy, 95.75.Rs
   in atmospheric optics, 42.68.Wt
   in exploration geophysics, 93.85.Pq
   optical devices for, 42.79.Qx
   by radar, 84.40.Xb
   in structural geology, 91.55.Uv
Renewable energy resources (see section 88)
   new topics in renewable energy resources, 88.90.+t
Renner-Teller effects, 33.20.Wr
Renormalization
```

```
in field theory, 11.10.Gh, 11.10.Hi
   in statistical physics and nonlinear dynamics, 05.10.Cc
Renormalization-group theory
   in phase transitions, 64.60.ae
Reptation, 83.10.Kn
Resins, ion-exchange, 83.80.-k
Resistance measurement, 84.37.+q
Resistors, 84.32.Ff
Resists, 85.40.Hp
Resonance reactions, nucleon-induced, 25.40.Ny
Resonances
   baryon, 14.20.Gk
   heavy-ion induced, 25.70.Ef
   in nuclear reactions, 24.30.-v
   in relativistic heavy-ion collisions, 25.75.Gz
Resonant tunneling, 73.40.Gk
Resonant tunneling devices, 85.30.Mn
   spin polarized, 85.75.Mm
Resonators, laser, 42.60.Da
Resource letters, 01.30.Rr
Respiration, 87.19.Wx
Retraction (of a paper), 99.10.Ln
Reverberation, *43.55.Br, *43.55.Nd
Reversals, geomagnetic field, 91.25.Mf
Reviews, 01.30.Rr
Reynolds-number
   high
     biopropulsion, 47.63.mc
     turbulent flows, 47.27.Jv
   low
     biopropulsion, 47.63.mf
     laminar flows, 47.15.G-
Reynolds stress modeling (turbulent flows), 47.27.em
rf discharges, 52.80.Pi
RHEED, 61.05.jh
Rheology. See 83
   of body fluids, 87.19.rh
   of complex fluids, 47.57.Qk
   of the Earth, 91.32.-m
Rheopexy, 83.60.Pq
Riemannian geometries, 02.40.Ky
Rigid bodies, dynamics and kinematics of, 45.40.-f
```

```
Ring currents (magnetosphere), 94.30.Kq
Ring galaxies, 98.52.Sw
Ring lasers, 42.55.Wd
Rings, planetary, 96.30.Wr
Risk/benefit analysis (radiation safety), 87.55.N-
Rivers, 92.40.Qk, *92.40.qh
RNA, 82.39.Pj, 87.14.gn
Robotics
   in biomedical engineering, 87.85.St
   kinematics of rigid bodies, 45.40.Ln
Robotic vision, 42.30.Tz
Rocks
   magnetic and electrical properties, 91.25.F-, 91.60.Pn
   permeability, 91.60.Np
   physical properties of, 91.60.-x
   rheology of, 83.80.Nb
Rods
   structural acoustics of, *43.40.Cw
   structural mechanics of, 46.70.Hg
Room acoustics, *43.55.-n, 43.55.+p
Rossby waves (ocean waves), *92.10.hf
Rotamaks, 52.55.Lf
Rotating flows, 47.32.Ef
Rotation, measurement of, 06.30.Gv
Rotational constants, molecular, 33.15.Mt
Rotational dynamics, 45.20.dc
Rotational energy transfer, 34.50.Ez
Rotational isomerism, 33.15.Hp
Rotational levels
   macromolecular, 36.20.Ng
   molecular, 33.20.Sn
   nuclear, 21.10.Re
Rovibronic states, 33.20.Wr
r-process (nuclear astrophysics), 26.30.Hj
Rubber, 81.05.Lg
Ruthenates (superconducting materials), 74.70.Pq
Rutherford backscattering spectroscopy, 82.80.Yc
Rydberg states
   excitation and ionization
     of atoms, 32.80.Rm
     of molecules, 33.80.Rv
Safety
```

```
fission reactor, 28.41.Te
   fusion reactor, 28.52.Nh
   laboratory, 06.60.Wa
   laser systems, 42.60.By
   in treatment strategy (medical physics), 87.55.N-
Sagnac effect, fiber gyros, 42.81.Pa
Sample preparation, 06.60.Ei
Sandpile models, 45.70.Cc
Sand piles
   phase transitions in, 64.60.av
Satellites
   artificial, Earth, 07.87.+v, 95.40.+s
   communication, 84.40.Ua
   interaction with solar wind, 96.50.Ek
   lunar and planetary probes, 95.55.Pe
   Moon, 96.20.-n
   orbits of, 91.10.Sp
Saturn, 96.30.Mh
   Saturnian satellites, 96.30.N-
Scaling effects in ferroelectric phase transitions, 77.80.bj
Scaling phenomena
   in complex systems, 89.75.Da
   in field theory, 11.10.Jj
Scanners, optical, 42.79.Ls
Scanning Auger microscopy, 68.37.Xy
Scanning electron microscopy, 68.37.Hk
Scanning transmission electron microscopy (STEM), 68.37.Ma
Scanning tunneling microscopes, 07.79.Fc
Scanning tunneling microscopy (STM)
   in biophysics, 87.64.Dz
   instrumentation for, 07.79.Cz
   single particle tunneling (superconductivity), 74.55.+v
   in study of surface structure, 68.37.Ef
Scattering
   acoustical, *43.20.Fn, *43.25.Jh
     ultrasound, *43.35.Bf, *43.35.Cg
     underwater, *43.30.Ft, *43.30.Gv, *43.30.Hw
   Brillouin
     in condensed matter, 78.35.+c
     stimulated Brillouin scattering, 42.65.Es
       in laser-plasma interactions, 52.38.Bv
   elastic
```

```
atomic and molecular, 34.50.-s
     pion-nucleus, 25.80.Dj
   of electromagnetic radiation in plasmas, 52.25.Os
   electron
     in atomic and molecular collisions, 34.80.-i
     in magnetic structure determinations, 75.25.-j
     in nuclear reactions, 25.30.-c
     in structure determination, 61.05.J-, 61.05.jd
   in electronic transport
     metals and alloys, 72.15.Qm
     semiconductors and insulators, 72.20.Dp
     thin films, 73.50.Bk
   hadron-induced
     high-energy, 13.85.-t
     low-energy, 13.75.-n
   hyperon-induced, 25.80.Pw
   inelastic
     atomic and molecular, 34.50.-s
     neutron, 25.40.Fq
     pion, 25.80.Ek
   laser-modified, 34.50.Rk, 34.80.Qb
   muon-nucleus, 25.30.Mr
   neutrino-nucleus, 25.30.Pt
   neutron, 28.20.Cz
     in structure determination, 61.05.fg
   nonrelativistic theory of, 03.65.Nk
   by phonons and magnons, 72.10.Di
   pion inclusive, 25.80.Ls
   positron-nucleus, 25.30.Hm
   relativistic theory of, 11.80.-m
   x-ray
     in condensed matter, 78.70.Ck
     in structure determination, 61.05.cf
Scattering matrix, 11.55.-m
Scattering methods (electronic structure), 71.15.Ap
Scattering theory (quantum mechanics), 03.65.Nk
Schlieren devices, 42.79.Mt
Schottky barrier diodes, 85.30.Hi, 85.30.Kk
Schottky barriers, 73.30.+y
Schottky defects, 61.72.J-
Science
   in elementary school, 01.40.eg
```

```
in government policy, 01.78.+p
   history of, 01.65.+g
   philosophy of, 01.70.+w
   in secondary school, 01.40.ek
   and society, 01.75.+m
Scintillation, 78.70.Ps
Scintillation detectors, 29.40.Mc
Seafloor spreading, geomagnetism variations, 91.25.gj
Sea ice, 92.10.Rw, *92.40.vx
Sea level
   global change, 92.70.Jw
   oceanography, *92.10.hp
Seas, regional, 93.30.Rp
Seasonal cycles (oceanography), 92.05.Fg
Sea surface temperature
   paleoceanography, *92.30.Tq
Seawater
   physical properties of, 92.05.Hj
Secondary electron emission, 79.20.Hx
Secondary-ion mass spectrometry (SIMS), 68.49.Sf, 82.80.Ms
Second harmonic generation, 42.65.Ky
Sedimentary petrology, 91.65.Ti
Sedimentation
   in chemical and biological oceanography, 92.20.Vn
   complex fluids, 47.57.ef
   in marine geology, 91.50.Jc
Sediment transport
   hydrologic, 92.40.Gc
   oceanic, 92.10.Wa
Segregation. See phase separation
   in granular systems, 45.70.Mg
Seismicity, 91.30.Dk
Seismographs, *43.40.Ph
Seismology, 91.30.-f
   core and mantle, 91.30.Uv
   free oscillations in, 91.30.Fn
   lithosphere, 91.30.Wx
   seismic sources, 91.30.Bi
   tomography in, 91.30.Jk
   transform faults, 91.30.lv
   underwater acoustics of, *43.30.Ma
Seismotectonics, *91.45.gd
```

```
Selected-area electron diffraction, 61.05.jm
Selenodesy (Moon), 96.20.Jz
Self-assembly, 64.75.Yz
Self-assembly (nanofabrication), 81.16.Dn
Self-consistent field calculations
   for atoms and molecules, 31.15.xr
   in nuclear structure, 21.60.Jz
   for solids, 71.15.Mb
Self-diffusion
   in liquids (mass diffusion), 66.10.cg
   in metals and alloys, 66.30.Fq
   in nonmetals, 66.30.H-
Self-focusing
   in laser-plasma interactions, 52.38.Hb
   in nonlinear optics, 42.65.Jx
Self-gravitating systems, 04.40.-b
Self-induced transparency, 42.50.Md
Self-organization
   complex systems, 89.75.Fb
   statistical physics, 05.65.+b
Self-phase modulation (nonlinear optics), 42.65.Jx
Semiclassical theories
   in atomic physics, 31.15.xg
   in gauge fields, 11.15.Kc
   in quantum mechanics, 03.65.Sq
Semiconductor detectors
   for nuclear physics, 29.40.Wk
   optoelectronic, 85.60.-q
Semiconductor devices, 85.30.-z
Semiconductor lasers, 42.55.Px
Semiconductors
   absorption and reflection spectra of, 78.40.Fy
   amorphous (conductivity), 72.80.Ng
     thin films, 73.61.Jc
   band structure of, 71.20.Mq, 71.20.Nr
   conductivity of, 72.20.-i
   doping of, 61.72.uf, 61.72.uj
   in electrochemistry, 82.45.Vp
   fabrication of, 81.05.Cy, 81.05.Dz, 81.05.Ea, 81.05.Gc, 81.05.Hd
   film growth, 68.55.ag
   impurity levels of, 71.55.-i
   infrared and Raman spectra of, 78.30.Am, 78.30.Fs
```

```
liquid
     conductivity of, 72.80.Ph
     electronic structure of, 71.22.+i
   magnetic, 75.50.Pp
   nonelectronic thermal conduction in, 66.70.Df
   as nonlinear optical materials, 42.70.Nq
   organic, 81.05.Fb
   phase separation and segregation in, 64.75.Qr
   photoluminescence of, 78.55.-m
   radiation effects in, 61.82.Fk
   semiconductor-electrolyte contacts, 73.40.Mr
   semiconductor-insulator-semiconductor structures, 73.40.Ty
   semiconductor-metal-semiconductor structures, 73.40.Vz
   semiconductor-to-insulator structure, 73.40.Qv
   semiconductor-to-semiconductor contacts, 73.40.-c
   solid-solid transitions, 64.70.kg
   solid surfaces of, 68.47.Fg
   spin polarized transport in, 72.25.Dc
   surface structure of, 68.35.bg, 68.35.bj
   thin films
     optical properties of, 78.66.-w
     transport processes in, 73.50.-h, 73.61.-r
Semiconductors, elemental
   band structure of, 71.20.Mg
   conductivity of, 72.80.Cw
   impurity and defect levels in, 71.55.Ak
   infrared and Raman spectra of, 78.55.Ap
   photoluminescence of, 78.55.Ap
   processing of, 81.05.Cy
   thin films
     conductivity of, 73.61.Cw
     optical properties of, 78.66.Db
      photoemission and photoelectron spectra of, 79.60.Bm
Semiconductors, III-V
   doping and ion implantation of, 61.72.uj
   electrical conductivity of, 72.80.Ey
   fabrication of, 81.05.Ea
   impurity and defect levels in, 71.55.Eq
   infrared and Raman spectra of, 78.30.Fs
   photoluminescence of, 78.55.Cr
   thin films and layered structures
     electrical properties of, 73.61.Ey
```

```
optical properties of, 78.66.Fd
Semiconductors, II-VI
   doping and ion implantation of, 61.72.uj
   electrical conductivity of, 72.80.Ey
   fabrication of, 81.05.Dz
   impurity and defect levels in, 71.55.Gs
   infrared and Raman spectra of, 78.30.Fs
   photoluminescence of, 78.55.Et
   thin films and layered structures
     electrical properties of, 73.61.Ga
     optical properties of, 78.66.Hf
Semi-empirical methods (atomic physics), 31.15.bu
Semimetals
   electronic structure of, 71.20.Gj
   impurity and defect absorption of, 78.40.Kc
   impurity and defect levels in, 71.55.Ak
   processing of, 81.05.Bx
   self-diffusion in, 66.30.Fq
   visible and ultraviolet spectra of, 78.40.Kc
Sensors
   biosensors, 87.85.fk
   chemical, 07.07.Df
   electrical, 07.07.Df
   electrochemical, 82.47.Rs
   fiber-optical, 42.81.Pa
   gas, 07.07.Df
   magnetic field, 85.75.Ss
   motion, 07.07.Df
   optical, 42.79.Pw, 42.79.Qx
   pressure, 07.07.Df
Sensory systems (neuroscience), 87.19.lt
Separated flows, 47.32.Ef
Septa (beam optics), 41.85.Ne
Sequences and series, 02.30.Lt
Servo devices, 07.07.Tw
Set theory, 02.10.Ab
Seyfert galaxies, 98.54.Cm
Shape memory effects
   deformation and plasticity, 62.20.fg
Shear flows
   boundary-free, 47.27.W-
   free layers, 47.15.St
```

```
instability of, 47.20.Ft
   rheological measurements of, 83.85.Vb
   steady (rheology), 83.50.Ax
   wall-bounded, 47.27.N-
Shear modulus, 62.20.de, 81.40.Jj
Shear stress, 83.10.-y
Shear thinning and shear thickening, 83.60.Rs
Shear turbulence, 47.27.nb
Shear waves (fluids), 47.35.De
Shelf processes, 91.50.Cw
Shell model (nuclear structure), 21.60.Cs
Shells
   in structural acoustics, *43.40.Ey
   in structural mechanics, 46.70.De
Shielding (nuclear technology), 28.41.Qb
Shock tubes, 07.35.+k
Shock wave effects
   in solids and liquids, 62.50.Ef
Shock waves, *43.25.Cb, *43.40.Jc
   aeroacoustics, *43.28.Mw
   in chemical reaction kinetics, 82.40.Fp
   in fluid dynamics, 47.40.Nm
   interplanetary, 96.50.Fm
   in plasma, 52.35.Tc
   plasma production and heating by, 52.50.Lp
   in seismology, 91.30.Mv
   in structural mechanics, 46.40.Cd
Short-range order
   in amorphous materials, 61.43.-j
   in magnetically ordered materials, 75.40.-s
Shutters, optical, 42.79.Ag
Signal processing
   in acoustics, *43.60.-c, 43.60.+d
   in biomedical engineering, 87.85.Ng
   electronic circuits for, 07.50.Qx
   in optics, 42.79.Sz, 42.79.Ta
Silicon, doping and ion implantation of, 61.72.uf
Silurian period, *91.70.fh
Single-electron devices, 85.35.Gv
Single-electron tunneling, 73.23.Hk
Single-molecule kinetics, 82.37.-j
Single-molecule techniques
```

```
biophysical techniques, 87.80.Nj
Single-particle states (nanoscale materials), 73.22.Dj
Single-photon emission computed tomography (SPECT), 87.57.uh
Singularity theory, 02.40.Xx
Sintering, 81.20.Ev
Skin effect, 72.30.+q
Skyrmions, 12.39.Dc
Sky surveys, 95.80.+p
Slip (dislocations), 61.72.Hh
Slip flows
   in gas dynamics, 47.45.Gx
   in rheology
     boundary effects, 83.50.Lh
     wall slip, 83.50.Rp
Slurries, 83.80.Hj
Small-angle scattering
   neutron
     in structure determination, 61.05.fg
   x-ray
     in structure determination, 61.05.cf
Smart prosthetics, 87.85.F-
   bidirectional communication in, 87.85.fp
   biosensors in, 87.85.fk
   feedback in, 87.85.ff
   feedforward in, 87.85.fh
S-matrix theory, 11.55.-m
Snow, 92.40.Ea, *92.40.ed
   avalanches, snow melt, 92.40.Ea, *92.40.vw
SN and SNS junctions (superconductivity), 74.45.+c
Social systems, 89.65.-s
   anthropology, 89.65.Ef
   demographic studies, 89.65.Cd
   social organizations, 89.65.Ef
   in ecology and evolution, 87.23.Ge
Social issues
   biomass energy production, 88.20.Y-
   food versus fuel debate, 88.20.Yq
   wind energy production, 88.50.Xy
Soil moisture and temperature, 92.40.Lg
Solar absorbers, 42.79.Ek
Solar activity, 96.60.Q-
Solar cells
```

```
cost of production, 88.40.hm
   efficiency and performance of, 88.40.hj
   types of
      multijunction solar cells, 88.40.jp
     organic photovoltaics, 88.40.jr
     silicon solar cells, 88.40.jj
     thin film III-V and II-VI solar cells, 88.40.jm
     thin film Cu-based I-III-V12, 88.40.jn
Solar collectors and concentrators, 42.79.Ek
Solar emission
   electromagnetic waves, *96.60.T-, 96.60.Tf
      radio emission, 96.60.Tf, *96.60.tg
     ultraviolet emission, 96.60.Tf, *96.60.tj
     visible emission, 96.60.Tf, *96.60.th
     x-ray and gamma-ray emission, 96.60.Tf, *96.60.tk
   particle emission, solar wind, 96.60.Vg
Solar energy
   residential and commercial buildings, 88.40.M-
      active space/water heating, 88.40.mg
      building facades, 88.40.mv
     building-integrated photovoltaics, 88.40.mr
     day lighting/natural lighting of, 88.40.mx
      grid-tied solar electric systems, 88.40.mp
     outdoor solar lights, 88.40.my
      passive space/water heating, 88.40.mj
      pool heating systems, 88.40.mm
      roof top shingles, 88.40.mt
   solar cells, 88.40.H-
     cost of production, 88.40.hm
     efficiency and performance of, 88.40.hj
     types of
       multijunction solar cells, 88.40.jp
       organic photovoltaics, 88.40.jr
       silicon solar cells, 88.40.jj
       thin film III-V and II-VI solar cells, 88.40.jm
       thin film Cu-based I-III-V12, 88.40.jn
   solar concentrators, 88.40.F-
      advanced materials development, 88.40.fh
      concentrating collectors, 88.40.fr
      dish/engine systems, 88.40.fm
      modeling and analysis of, 88.40.fc
      parabolic-trough mirrors, 88.40.fj
```

```
performance testing of, 88.40.ff
      power tower systems, 88.40.fp
Solar flares, 96.60.qe
Solar instruments, 95.55.Ev
Solar interior, 96.60.Jw
Solar irradiance, 96.60.Ub
Solar nebula, 96.10.+i
Solar neighborhood (Milky Way), 98.35.Pr
Solar neutrinos, 26.65.+t
Solar particles and photons (cosmic rays), 96.50.Vg
Solar physics, 96.60.-j
Solar pulsations, 96.60.Ly
Solar radiation
    in atmosphere, 92.60.Vb
    in ionosphere, 94.20.wq
Solar streamers, 96.60.pf
Solar system. See 96
Solar wind, 96.60.Vg
    sources of, 96.50.Ci
    termination, 96.50.Ek
Soldering, 06.60.Vz
Solenoids, 84.32.Hh
Sol-gels
    as disperse system, 82.70.Gg
    materials processing, 81.20.Fw
    reactions in, 82.33.Ln
Sol-gel transition, 83.80.Jx
Solid <sup>3</sup>He, 67.80.D-
    films in, 67.80.dm
    impurities in, 67.80.dj
    lattice dynamics of, 67.80.de
    magnetic properties of, 67.80.dk
Solid <sup>4</sup>He, 67.80.B-
    interfaces, 67.80.bf
    superfluidity in, 67.80.bd
Solid hydrogen, 67.80.F-
Solidification, 64.70.D-, 81.30.Fb
Solid-liquid transitions, 64.70.D-
Solid-oxide fuel cells (SOFC), 82.47.Ed
Solid-phase epitaxy and growth, 81.15.Np
Solid-solid interfaces, 68.35.-p
Solid-solid transitions, 64.70.K-, 81.30.-t
```

```
glasses, 64.70.kj
   metals, 64.70.kd
   phase diagrams of, 81.30.-t
   polymers, 64.70.km
   semiconductors, 64.70.kg
Solid-solution hardening, 81.40.Cd
Solid solutions
   phase separation and segregation in, 64.75.Nx
Solid state chemistry, 82.33.Pt
Solid state dynamics, spectroscopy of, 78.47.-p
Solid-state lasers, 42.55.Px, 42.55.Rz
Solid-state plasma
   in bulk matter, 72.30.+q
   in thin films, 73.50.Mx
Solid surface planets
   atmosphere, *96.12.J-, 96.12.Jt
   glaciation, 96.12.Kz, *96.12.ki
   hydrology, 96.12.Kz, *96.12.ka
   ionosphere, 96.12.Jt, *96.12.ji
   surfaces, *96.12.K-, 96.12.Kz
Solid-vapor transitions, 64.70.Hz
Solitons
   acoustical, *43.25.Rq
   in Bose-Einstein condensates, 03.75.Lm
   fluids, 47.35.Fg
   nonlinear dynamics of, 05.45.Yv
   optical, 42.65.Tg
   in optical fibers, 42.81.Dp
   in plasma, 52.35.Sb
   in space plasma, 94.05.Fg
Sols, 82.70.Gg
Solubility, 64.75.Bc
Solutions (mixtures)
   of biomolecules, 87.15.N-
   of <sup>3</sup>He in liquid <sup>4</sup>He, 67.60.G-
     films in, 67.60.gj
     spin polarized, 67.60.gc
   macromolecular and polymer
     structure of, 61.25.H-
   thermodynamics of, 82.60.Lf
Solvated electrons, 79.05.+c
Solvent effects
```

```
in atomic and molecular interactions, 31.70.Dk
   in chemical reactions, 82.20.Yn
Sonar
   active systems, *43.30.Vh
   passive systems, *43.30.Wi
Sonic boom, *43.28.Mw
Sonography (rheology), 83.85.Ei
Sonoluminescence
   in acoustics, *43.35.HI
   in condensed matter, 78.60.Mg
Sorption, 68.43.-h
Sound
   atmospheric, *43.28.-g, 43.28.+h
   effects on biological systems, 87.50.Y-
   in fluids, 47.35.Rs
   generation and reproduction devices for, 43.38.+n, *43.38.-p
   generation by fluid flow, *43.28.Ra
   physical effects of, *43.35.-c, 43.35.+d
   in plasma, 52.35.Dm
   propagation of, *43.20.Bi
     macrosonic, *43.25.Cb
   recording and reproducing systems for, *43.38.Md, *43.38.Ne, *43.38.Qg
   reflection, refraction, and diffraction of, *43.20.El
   reinforcement systems for, *43.38.Tj
   in superfluid helium-4, 67.25.dt
   underwater, *43.30.-k, 43.30.+m
   velocity, *43.20.Hq
     measurement of, *43.58.Dj
   wall transmission through, *43.55.Rg
Soundings, ionospheric, 94.20.Tt
Sound sources
   intense, *43.25.Vt
   localization of, *43.66.Qp
   outdoor, *43.28.Hr
South America, 93.30.Jg
Southern Ocean, 93.30.Qn
Southern Oscillation, 92.10.-c, 92.60.-e
Spaceborne and space-research instruments, 07.87.+v, 95.55.-n
Space-charge-dominated beams (plasmas), 52.59.Sa
Space charge effects (dielectric properties), 77.22.Jp
Space charge-limited devices, 85.30.Fg
Spacecraft
```

```
interactions with atmosphere, 94.05.Hk
   sheaths and wakes, 94.05.Jq
Space geodetic surveys, 91.10.Fc
Space groups (crystal symmetry), 61.50.Ah
Space plasma, 94.05.-a
   radiation processes, 94.05.Dd
   solitons in, 94.05.Fg
   wave-wave, wave-particle interactions, 94.05.Pt
Spacetime
   curved
     Einstein-Maxwell, 04.40.Nr
     quantum fields in, 04.62.+v
     self-gravitating systems in, 04.40.-b
   topology of, 04.20.Gz
Space weather, *94.05.S-, 94.05.Sd
   forecasting, 94.05.Sd, *94.05.sx
   solar effects, 94.05.Sd, *94.05.sp
Spallation breeder reactors, 28.50.Ft
Spallation reactions, 25.40.Sc
Sparks, 52.80.Mg
Spatial dimensions, measurement of, 06.30.Bp
Spatial filters, optical, 42.79.Ci
Special relativity, 03.30.+p
Specific heat
   of liquids, 65.20.Jk
   of magnetic materials, 75.40.-s
   of solids, 65.40.Ba, 65.60.+a
   of superconductors, 74.25.Bt
Speckles, 42.30.Ms
SPECT, 87.57.uh
Spectral classification, stellar, 97.10.Ri
Spectral filters, 42.79.Ci
Spectral lines
   intensity of, 32.70.Fw, 33.70.Fd
   shape and shift of, 32.70.Jz, 33.70.Jg
Spectral methods
   computational techniques, 02.70.Hm
   in fluid dynamics, 47.11.Kb, 47.27.er
Spectral MRI (in neuroscience), 87.19.lf
Spectral sources, electric-discharge, 52.80.Yr
Spectra of biomolecules, 87.15.M-
Spectrochemical analysis, 82.80.Dx, 82.80.Ej, 82.80.Gk, 82.80.Ha
```

```
Spectrometers
   electron, 07.81.+a
   gamma-ray, 07.85.Nc
   infrared, 07.57.Ty
   ion, 07.81.+a
   magnetic resonance, 07.57.Pt
   microwave and radiowave, 07.57.Pt
   for nuclear physics, 29.30.-h
   visible and ultraviolet, 07.60.Rd
   x-ray, 07.85.Nc
Spectrophotometry
   in astronomy, 95.75.Fg
   in chemical analysis, 82.80.Dx
Spectroscopy
   in astronomy, 95.55.Qf, 95.75.Fg
   in chemical analysis, 82.80.-d
   in-beam (see 23)
   instrumentation
     in atomic and molecular physics, 07.57.-c
   laser, 42.62.Fi
   of solid state dynamics, 78.47.-p
     nonlinear optical spectroscopy, 78.47.N-
       four-wave mixing spectroscopy, 78.47.nj
       hole burning spectroscopy, 78.47.nd
       coherent nonlinear optical spectroscopy, 78.47.jh
   time resolved spectroscopy
     >1psec, 78.47.D-
       of conduction electrons, 78.47.db
       excited states, 78.47.da
       of radicals, 78.47.dc
     <1psec
       reflection spectroscopy, 78.47.jg
       light scattering spectroscopy, 78.47.je
       luminescence, 78.47.jd
   ultrafast spectroscopy <1psec
     coherent spectroscopy (femtochemistry), 82.53.Kp
     free polarization decay, 78.47.js
     optical nutation, 78.47.jp
     photon echoes, 78.47.jf
     pump probe studies (femtochemistry), 82.53.Eb, 82.53.Hn
     quantum beats, 78.47.jm
     transient absorption, 78.47.jb
```

```
transient grating spectroscopy, 78.47.jj
Speech
   perception, *43.71.-k, 43.71.+m
   processing, *43.72.-p, 43.72.+q
   production, *43.70.-h, 43.70.+i
     cross-linguistic, *43.70.Kv
Spheromaks, 52.55.lp
Spicules, 96.60.Na
Spin chain models, 75.10.Pq
Spin crossover, 75.30.Wx
Spin-density waves, 75.30.Fv
Spin diffusion, 75.40.Gb
Spin dynamics
   of superfluid helium-3, 67.30.hj
Spin echo, 76.60.Lz
Spin fluctuations (superconductivity), 74.20.Mn
Spin foams, 04.60.Pp
Spin glasses, magnetic properties of, 75.50.Lk
Spin-glass models, 75.10.Nr
Spin Hamiltonians, 75.10.Dg
Spin-lattice relaxation, 76.60.Es
Spinodal decomposition, 64.75.-g, 81.30.-t
Spin-orbit coupling
   atomic, 32.10.Fn, 33.60.+q
   in condensed matter, 71.70.Ej
   molecular, 33.15.Pw, 33.57.+c
   in magnetic thin films, 75.70.Tj
Spin ordering, 75.25.-j
Spinor structure, 04.20.Gz
Spin polarized <sup>3</sup>He, 67.30.ep
Spin-polarized transport
   field effect transistors, 85.75.Hh
   magnetic field sensors, 85.75.Ss
   resonant tunnel junctions, 85.75.Mm
Spin pumping, current-driven, 72.25.Pn
Spin transport (magnetoelectronics), 75.76.+j
Spintronics, 85.75.-d
   spin transport effects, 75.76.+j
Spin waves, 75.30.Ds
   and magnetic critical points, 75.40.Gb
   resonance, 76.50.+g
Spiral galaxies, 98.52.Nr, 98.56.Ne
```

```
Spoken languages, processing of, *43.71.Sy
Spontaneous symmetry breaking, 11.30.Qc
   of gauge symmetries, 11.15.Ex
Sports, physics of, 01.80.+b
Spray coating techniques, 52.77.Fv, 81.15.Rs
s-process (nuclear astrophysics), 26.20.Kn
Sputtering
   by atom, molecule, and ion impact, 79.20.Rf
   in etching, 81.65.Cf
   film deposition by, 81.15.Cd
Squeezed states, 42.50.Dv
SQUID devices, 85.25.Dq
Stacking faults, 61.72.Nn
Stalagmites, stalactites, *92.30.Xy
Standards
   acoustical, *43.15.+s
   frequency (astronomy), 95.55.Sh
   metrology, 06.20.F-, 06.20.fb
   optical, 42.72.-g
   in physiological optics, 42.66.Qg
Standing waves, acoustic
   linear, *43.20.Ks
   nonlinear, *43.25.Gf
Stark effect
   in atoms, 32.60.+i
   in condensed matter, 71.70.Ej
   in molecules, 33.57.+c
Stark shift, dynamic, 42.50.Hz
Stars
   binary and multiple, 97.80.-d
   characteristics and properties of, 97.10.-q
   formation of, 97.10.Bt
   late stages of evolution of, 97.60.-s
   normal, 97.20.-w
   relativistic, 04.40.Dg
   types of, 97.20.-w
   variable and peculiar, 97.30.-b
Starspots, 97.10.Qh
State reconstruction (quantum mechanics), 03.65.Wj
State selected dynamics (chemical reactions), 82.20.Bc
State-to-state energy transfer (chemical reactions), 82.20.Rp
State-to-state scattering analysis
```

```
atoms and molecules, 34.50.-s
Static elasticity, 46.25.-y
   theory in biological physics, 87.10.Pq
Static electrification, 41.20.Cv, 73.40.-c
Statistical mechanics
   of adsorbates, 68.43.De
   classical, 05.20.-y
   of displacive phase transitions, 63.70.+h
   of lattice vibrations, 63.70.+h
   of phase transitions in model systems, 64.60.De
   quantum, 05.30.-d
Statistical models
   in atomic physics, 31.15.bt
   of nuclear reactions, 24.10.Pa
   of strong interactions, 12.40.Ee
Statistical physics. See 05
Statistical theories
   of atomic and molecular collisions, 34.10.+x
   in chemical kinetics, 82.20.Db
   of nuclear reactions, 24.60.-k
Statistics, 02.50.-r
Stellarators, 52.55.Hc
Stellar clusters and associations, 98.20.-d
Stellar motion, 97.10.-q
Stellar seismology, 97.10.Sj
Stellar systems, 98.52.-b
Stellar winds, 97.10.Me
Stereochemistry
   of molecules, 33.15.Bh
Stereotactic radiosurgery, 87.53.Ly
Stimulated emission
   condensed matter, 78.45.+h
   laser theory, 42.55.Ah
Stimulated scattering
   Brillouin and Raman (plasma), 52.38.Bv
   Brillouin and Rayleigh, 42.65.Es
   Raman, 42.65.Dr
   Raman lasers, 42.55.Ye
STM (scanning tunneling microscopy)
   in biophysics, 87.64.Dz
   instrumentation for, 07.79.Cz
   single particle tunneling (superconductivity), 74.55.+v
```

```
in study of surface structure, 68.37.Ef
Stochastic analysis, 02.50.Fz
Stochastic models
   of atomic and molecular collisions, 34.10.+x
   in biological physics, 87.10.Mn
   of chemical kinetics, 82.20.Fd
   in statistical physics and nonlinear dynamics, 05.10.Gg
Stochastic processes, 05.40.-a
Stoichiometry, 61.50.Nw
Stokes flow, 83.10.-y
Stopping power, 34.50.Bw, 61.85.+p
Storage rings, 29.20.db
Storage tubes, 84.47.+w
Storms
   atmospheric, 92.60.Qx
   ionospheric, 94.20.Vv
Strain-induced level splitting, 71.70.Fk
Strain-induced piezoelectric fields, 77.65.Ly
Strain effects in ferroelectric transitions, 77.80.bn
Strains
   measurement of, 07.10.Pz
   in solids, 62.20.-x
   in thin films, 68.60.Bs
Strange particles, 14.20.Jn, 14.40.-n
Stratification
   in granular flow, 45.70.Mg
   in nonhomogeneous flows, 47.55.Hd
Stratosphere, 92.60.hd
   stratosphere/troposphere interactions, 92.60.Xg
Streamflow, 92.40.Qk, *92.40.qp
Streams, corotating (interplanetary space), 96.50.Qx
Stress corrosion cracking, 62.20.mt
Stress measurement, 07.10.Lw
Stress relaxation
   mechanical properties of solids, 62.40.+i
   in rheology, 83.85.St
Stress-strain relations, 62.20.D-, 81.40.Jj
Strings
   black
     in general relativity, 04.50.Gh
   cosmic
     field theory aspects of, 11.27.+d
```

```
in models of early Universe, 98.80.Cq
   in general theory of fields and particles, 11.25.-w
   in structural acoustics, *43.40.Cw
   in structural mechanics, 46.70.Hg
String theory
   gravitational aspects of, 04.60.Cf
   M theory, 11.25.Yb
   particles and fields, 11.25.-w
Strip lines, 84.40.Az
Stroke, 87.19.xq
Strong-field excitation (quantum optics), 42.50.Hz
Strong interactions
   electromagnetic corrections, 13.40.Ks
   models of, 12.40.-y
   in quantum chromodynamics, 12.38.-t
   quark models, 12.39.-x
   in unified theories, 12.10.Dm
Strongly correlated electron systems, 71.27.+a
Strongly coupled plasmas, 52.27.Gr
Structural acoustics, *43.40.-r, 43.40.+s
Structural geology
   crustal deformation kinematics, 91.55.Ln
   folds, 91.55.Hj
   fractures and faults, 91.55.Fg, 91.55.Jk
   local and regional crustal structure, 91.55.Nc
   melanges, 91.55.Pq
   mesoscopic fabrics, 91.55.Qr
   pluton emplacement, 91.55.Sn
   role of fluids in, 91.55.Tt
Structure
   of amorphous metals and semiconductors, 61.43.Dq
   of atoms and molecules, 32.10.-f, 33.15.-e
   of biomolecular aggregates, 87.15.bk
   of biomolecules, 87.15.B-
     secondary structure, 87.15.bd
     tertiary structure, 87.15.bg
   of clean solid surfaces, 68.35.B-
   of clusters, 36.40.Mr, 61.46.Bc
   of crystalline solids, 61.66.-f
   of dendrites, 68.70.+w
   of disordered solids, 61.43.-j
   of fractals, 61.43.-j
```

```
of fullerenes, 61.48.-c
   of galaxies, 98.62.Lv
   of glasses, 61.43.Fs
   of graphene, 61.48.Gh
   irradiation effects on, 61.80.-x
   of liquid crystals, 61.30.-v
   of liquids, 61.20.-p, 61.25.-f
   of multilayers, 68.65.Ac
   of nanoparticles, 61.46.Df
   of quasicrystals, 61.44.-n
   stellar, 97.10.Cv
   of superlattices, 68.65.Cd
   of thin films, 68.55.-a, 68.55.J-
   of whiskers, 68.70.+w
Structures, mechanical, 46.70.-p
Subcellular structure and processes, 87.16.-b
   cell walls, 87.16.Gj
   chromosomes in, 87.16.Sr
   cytoskeleton, 87.16.Ln
   filaments in, 87.16.Ka
   intracellular signaling, 87.16.Xa
   intracellular trafficking, 87.16.Wd
   membranes in, 87.16.D-
   microtubules in, 87.16.Ka
   mitochondria in, 87.16.Tb
   morphology of nerve cells, 87.16.Mq
   motor proteins in, 87.16.Nn
   nuclear morphology, 87.16.Zg
   regulatory networks, 87.16.Yc
   theory and modeling of, 87.16.A-
   transport processes in, 87.16.dp, 87.16.Uv, 87.16.Vy
Subduction zones
   geochemistry of, *91.67.fc
   in marine geology, 91.50.Wy
   seismology of, 91.30.Ga
   in tectonophysics, 91.45.Hc
   in volcanology, 91.40.Rs
Sublimation, 64.70.Hz
Submarine landslides, 91.50.Xz
Submersible ocean observatories, 91.50.Yf
Submillimeter waves
   astronomical observations, 95.85.-e
```

```
receivers and detectors, 07.57.Kp
   sources, 07.57.Hm
Subsonic flows, 47.40.Dc
SU groups
   in nuclear physics, 21.60.Fw
   in particle physics, 11.30.Hv, 11.30.Ly
Summer schools, 01.30.Bb
Sum rules (S-matrix theory), 11.55.Hx
Sun
   characteristic and properties of, 96.60.-j
   cosmic rays, 96.50.S-
   helioseismology, 96.60.Ly
   radiation (meteorology), 92.60.Vb
   solar magnetism, 96.60.Hv
Sunspots, 96.60.qd
Superconducting cables, 84.71.Fk
Superconducting devices, 85.25.-j
Superconducting films, 74.78.-w
Superconducting high-power technology, 84.71.-b
Superconducting integrated circuits, 85.25.Hv
Superconducting junctions (SN and SNS), 74.45.+c
Superconducting low-dimensional structures, 74.78.-w
Superconducting magnets, 84.71.Ba
Superconducting materials
   noncuprate materials, 74.70.-b
     binary compounds, 74.70.Ad
     borocarbides, 74.70.Dd
     chalcogenides, 74.70.Xa
     carbon-based materials, 74.70.Wz
     heavy-fermion materials, 74.70.Tx
     magnesium diboride, 74.70.Ad
     metals and alloys, 74.70.Ad
     multinary compounds, 74.70.Dd
     organic compounds, 74.70.Kn
     pnictides, 74.70.Xa
     ruthenates, 74.70.Pq
   cuprates, 74.72.-h
     electron doped compounds, 74.72.Ek
     hole doped compounds, 74.72.Gh
     insulating parent compounds, 74.72.Cj
     pseudogap regime materials, 74.72.Kf
Superconducting wire networks, 74.81.Fa
```

```
Superconducting wires, fibers, and tapes, 84.71.Mn
Superconductivity
   new topics in, 74.90.+n
   potential candidates, 74.10.+v
   theories and models of, 74.20.-z
     BCS theory, 74.20.Fg
     electronic structure calculations, 74.20.Pq
     Ginzburg-Landau theory, 74.20.De
     nonconventional mechanisms in, 74.20.Mn
     pairing symmetries, 74.20.Rp
     two-fluid theory, 74.20.De
Superconductors
   nuclear magnetic resonance (NMR), 74.25.nj
   optical spectra, 74.25.nd
   phonons in, 74.25.Kc
   Raman spectra, 74.25.nd
   properties of, 74.25.-q
     acoustical properties, 74.25.Ld
     critical currents, 74.25.Sv
     critical fields, 74.25.Op
     energy levels (electronic structure), 74.25.Jb
     magnetic properties, 74.25.Ha
     mechanical properties, 74.25.Ld
     optical properties, 74.25.Gz
     photoemission, 74.25.Jb
     surface impedance, 74.25.nn
     surface sheaths, 74.25.Op
     transport properties, 74.25.F-
     vortex phases, 74.25.Uv
     vortex pinning, 74.25.Wx
Supercritical fluids
   chemical reactions in, 82.33.De
   optical properties of, 78.15.+e
Superexchange interactions, 75.30.Et
Superfluidity
   hydrodynamic aspects of, 47.37.+q
   of mixed systems, 67.60.-g
Superfluorescence, 42.50.Nn
Supergiant stars, 97.20.Pm
Supergravity, 04.65.+e
Superheavy elements
   properties of, 27.90.+b
```

```
reactions and scattering of, 25.70.-z, 25.75.-q
Superionic conductors, 66.30.H-
Superlattices
   dielectric films, 77.55.Px
   electron states and collective excitations in, 73.21.Cd
   magnetic properties of, 75.70.Cn
   optical properties of, 78.67.Pt
   photoemission and photoelectron spectra of, 79.60.Jv
   structure and nonelectronic properties of, 68.65.Cd
   superconducting, 74.78.Fk
Supermagnetism, 75.50.Vv
Supernovae, 97.60.Bw
   evolution, nuclear physics aspects of, 26.50.+x
   explosive burning in shock fronts, 26.30.Ef
   nucleosynthesis in, 26.30.-k
Supernova remnants
   in external galaxies, 98.58.Mj
   in Milky Way, 98.38.Mz
Superplasticity, 62.20.fq
Super-radiance, 42.50.Nn
Supersaturation measurement, 82.20.-w
Supersolids
   <sup>4</sup>He, 67.80.bd
   quantum solids, 67.80.K-
Supersonic flows, 47.40.Ki
Supersymmetric Higgs bosons, 14.80.Da
Supersymmetric models, 12.60.Jv
Supersymmetric partners of known particles, 14.80.Ly
Supersymmetry, 11.30.Pb
Supramolecular assembly, 81.16.Fg
Surface acoustic wave devices, 85.50.-n
   superconducting, 85.25.Qc
   transducers for, *43.38.Rh
Surface acoustic waves
   effect of nonlinearity on, *43.25.Fe
   in piezoelectrics, 77.65.Dq
   in solids and liquids, *43.35.Pt, 68.35.Iv
Surface barrier devices, 85.30.Hi
Surface cleaning, 81.65.Cf
   plasma-assisted, 52.77.Bn
Surface conductivity, 73.25.+i
Surface crossings (electronic structure), 31.50.Gh
```

```
Surface diffusion, 68.35.Fx
Surface double layers, 73.30.+y, 82.45.Mp
Surface dynamics, 68.35.Ja
Surface-enhanced Raman scattering (SERS), 78.30.-j
Surface energy
   of solid surfaces, 68.35.Md
   thermal properties of crystalline solids, 65.40.gp
Surface flows, 83.50.Lh
Surface hardening, 81.65.Lp
Surface impedance (superconductivity), 74.25.nn
Surface magnetism, 75.70.Rf
Surface patterning, 81.65.Cf
Surface phase transitions, 68.35.Rh
Surface plasmons, 73.20.Mf
Surface reconstruction, 68.35.B-
Surfaces
   adsorption on, 68.43.-h
   grinding of (optical elements), 42.86.+b
   microscopy of, 68.37.-d
   optical properties of, 78.68.+m
   reactions on, 82.40.-g, 82.65.+r
   scattering from, 68.49.-h
   structure of, 68.35.B-, 68.35.-p
   thermodynamics of, 05.70.Np, 68.35.Md
Surface sheath (superconductivity), 74.25.Op
Surface states, 73.20.-r
Surface strains, 68.35.Gy
Surface tension, 68.03.Cd
Surface treatments, 81.65.-b
Surface water, *92.40.Q-, 92.40.Qk
Surface waves
   in seismology, 91.30.Fn
Surfactants
   effects on bubbles and drops, 47.55.dk
   physical chemistry of, 82.70.Uv
   rheology of, 83.80.Qr
Surveys, 01.30.Rr
Susceptibility, magnetic
   dynamic, at magnetic critical points, 75.40.Gb
   of magnetically ordered materials, 75.30.Cr
   static, at magnetic critical points, 75.40.Cx
Susceptibility, optical, 42.65.An
```

```
Suspensions, 82.70.Kj
   complex fluids, 47.57.E-
   dielectric properties of, 77.84.Nh
   rheology of, 83.80.Hj
Sustainability (renewable energy), 88.05.Lg
Swelling
   of extrudate, 83.60.Jk
   of polymers, 61.25.hp
Swirling flows, 47.32.Ef
Switches
   electrical, 84.32.Dd
   optical, 42.79.Ta
   plasma, 52.75.Kq
Switching
   in ferroelectrics, 77.80.Fm
   in nonlinear optics, 42.65.Pc
   ultrafast magnetization dynamics, 75.78.Jp
Symbiosis (ocean biology), *92.20.jd
Symbolic computation, 02.70.Wz
Symmetry
   crystal, 61.50.Ah
   molecular, 33.15.Bh
   in nuclear processes, 24.80.+y
   nuclear tests of, 24.80.+y
   in theory of fields and particles, 11.30.-i
Symmetry breaking, 11.30.Qc
   flow instabilities, 47.20.Ky
   gauge field theory, 11.15.Ex
Synchronization, nonlinear dynamics, 05.45.Xt
Synchrotron radiation
   instrumentation for, 07.85.Qe
   by moving charges, 41.60.Ap
   in spin-arrangement determination, 75.25.-j
Synchrotrons, 29.20.dk
Syngas
   biopower systems, 88.20.mr
   as fuel from biomass, 88.20.fs
Synthetic aperture radar (SAR), 84.40.Xb
Systems biology, 87.18.Vf
Tandem mirrors, 52.55.Jd
Tantalates, 77.84.Ek
   tantalite-based dielectric films, 77.55.fj
```

```
Taste (sensory systems), 87.19.lt
Taus
   decays of, 13.35.Dx
   properties of, 14.60.Fg
Taylor-Couette flow, 47.20.Qr
Teacher training, 01.40.J-
Teaching methods, 01.40.gb
Technicolor models, 12.60.Nz
Technicolor particles, 14.80.Tt
Technological research and development, 89.20.Bb
Tectonophysics, 91.45.-c
   evolution of the Earth, 91.45.Nc
   heat generation and transport, 91.45.Rg
   hot spots, 91.45.Jg
   planetary interiors, 91.45.Bg
   stresses in, *91.45.X-, 91.45.Xz
   volcanic arcs, 91.45.Wa
Tektites, 96.30.Za
Telecommunications, 84.40.Ua
Telemetry, 84.40.Xb
Telescopes, 95.55.-n
Television cameras, 07.07.Hj
Telluric currents (geomagnetism), 91.25.Qi
Temperate regions, 93.30.Tr
Temperature
   atmospheric, 92.60.hv
   measurement of, 07.20.Dt
   stellar, 97.10.Ri
Tensile machines, 07.10.Lw
Tensile strength
   materials treatment effects on, 81.40.Lm
   of solids, 62.20.M-
Tension measurement, 07.10.Lw
Tephrochronology
   geochronology of, *91.80.St
   volcanology of, 91.40.Bp
Terrestrial atmosphere, 92.60.-e
Terrestrial electricity, 91.25.Qi
Terrestrial heat, 91.35.Dc
Terrestrial magnetism, 91.25.-r
Textbooks
   for graduates and researchers, 01.30.mm
```

```
for students in grades 9-12, 01.30.mr
   for students in grades K-8, 01.30.mt
   for undergraduates, 01.30.mp
Texture
   materials treatment effects on, 81.40.Ef
   of superconductors, 74.81.Bd
   of thin films, 68.55.jm
TGS crystals (dielectric materials), 77.84.Fa
Therapeutic applications
   of acoustic and ultrasonic radiation, 87.50.yt
   of electric and magnetic fields, 87.50.ct
   of ionizing radiations, 87.53.Jw
   of millimeter and terahertz radiation, 87.50.ux
   of optical and infrared radiation, 87.50.wp
   of radiofrequency and microwave radiation, 87.50.st
Thermal analysis, 81.70.Pg
Thermal blooming, 42.65.Jx
Thermal conduction
   in amorphous and liquid metals and alloys, 72.15.Cz
   in crystalline metals and alloys, 72.15.Eb
   in gases, 51.20.+d
   in glasses and polymers, 66.70.Hk
   in metals and alloys and semiconductors, 66.70.Df
   in ionic crystals, 66.70.Lm
   in nonmetallic liquids, 66.25.+g
   in superconductors, 74.25.fc
Thermal convection (fluid dynamics), 47.55.pb
Thermal diffusion
   in gases, 51.20.+d
   in liquids, 66.10.cd
Thermal diffusivity, 66.30.Xi
Thermal expansion, 65.40.De, 65.60.+a
Thermal instruments and techniques, 07.20.-n
Thermally stimulated currents
   in dielectrics, 77.22.Ej
   in thin films, 73.50.Gr
Thermal models, nuclear reactions, 24.10.Pa
Thermal neutron cross sections
   nuclear engineering, 28.20.Ka
Thermal processes in biology, 87.19.Pp
Thermal properties
   of amorphous solids and glasses, 65.60.+a
```

```
of crystalline solids, 65.40.-b
     electrochemical properties, 65.40.gk
   of gases, 51.30.+i
   of graphene, 65.80.Ck
   of liquids, 65.20.-w
   of nanocrystals, and nanotubes 65.80.-g
   of rocks and minerals, 91.60.Ki
   of small particles, 65.80.-g
Thermal radiation, 44.40.+a
Thermal stability (thin films), 68.60.Dv
Thermal waves in solids, 66.70.-f
Thermionic emission, 79.40.+z
Thermionic energy conversion, 52.75.Fk, 84.60.Ny
Thermionic plasma devices, 52.75.Xx
Thermistors, 84.32.Ff
Thermocapillary effects
   drops and bubbles, 47.55.dm
   interfacial flows, 47.55.nb
Thermocouples, 07.20.Dt
Thermodynamic properties
   of condensed matter, 65
   of gases, 51.30.+i
   of normal <sup>3</sup>He, 67.30.ef
   of normal <sup>4</sup>He, 67.25.bd
   of plasma, 52.25.Kn
   of solutions, 82.60.Lf
   of superconductors, 74.25.Bt
   of superfluid <sup>4</sup>He, 67.25.de
   of surfaces and interfaces, 05.70.Np, 68.35.Md
Thermodynamics, 05.70.-a
   in astrophysics, 95.30.Tg
   of black holes, 04.70.Dy
   chemical, 82.60.-s
   nonequilibrium, 05.70.Ln
   of nucleation, 82.60.Nh
   thermodynamic constraints (renewable energy resources), 88.05.De
Thermoelasticity, 46.25.Hf, 62.20.D-, 81.40.Jj
Thermoelectrets, 77.22.Ej
Thermoelectric devices, 85.80.Fi
Thermoelectric effects
   in metals and alloys, 72.15.Jf
   in semiconductors and insulators, 72.20.Pa
```

```
in superconductors, 74.25.fg
   thin films, 73.50.Lw
Thermoelectric energy conversion, 84.60.Rb
Thermoelectromagnetic devices, 85.80.-b
Thermoelectronic phenomena, 79.10.N-
Thermoforming, 83.50.-v
Thermography, 87.63.Hg
Thermogravimetric analysis, 81.70.Pg
Thermohaline convection
   oceanography, 92.10.af
   paleoceanography, *92.30.Uv
Thermoluminescence, 78.60.Kn
Thermomagnetic effects
   of metals and alloys, 72.15.Jf
   of semiconductors and insulators, 72.20.Pa
   of thin films, 73.50.Jt
Thermomechanical effects, 65.40.De
Thermomechanical treatment of materials, 81.40.Gh
Thermometers, 07.20.Dt
Thermonuclear technology, 28.52.-s
Thermo-optic effects, 78.20.N-
   photothermal effects, 78.20.nb
   photopyroelectric effects, 78.20.nc
   thermophotonic effects, 78.20.nd
Thermopiles, 07.20.Dt
Thermoreversible gels, 83.80.Kn
Thermorheological properties, 83.60.St
Thermosetting polymers, 83.80.Jx
Thermosphere, 92.60.hb
Theta pinch, 52.55.Ez
Thickening flows, 83.60.Pq
Thick films, 85.40.Xx
Thin film flows, 47.15.gm
Thin films
   acoustical properties, *43.35.Ns, 68.60.Bs
   conductivity of, 73.61.-r
   deposition methods of, 81.15.-z
   devices, magnetic, 85.70.Kh
   dielectric, 77.55.-g
   in electrochemistry, 82.45.Mp
   growth, structure, and epitaxy of, 68.55.-a, 81.15.Aa
   in integrated optics, 42.82.-m
```

```
Langmuir-Blodgett, 68.18.-g, 68.47.Pe
   liquid, 68.15.+e, 68.18.-g
   magnetic, 75.70.-i
   mechanical properties of, 68.60.Bs
   microscopy of, 68.37.-d
   morphology of, 68.55.J-
     texture, 68.55.jm
     thickness, 68.55.jd
   optical properties of, 78.20.-e
     of specific thin films, 78.66.-w
   phase separation and segregation in, 64.75.St
   photoemission and photoelectron spectra of, 79.60.Dp
   semiconductors, III-V
     electrical properties of, 73.61.Ey
     optical properties of, 78.66.Fd
   semiconductors, II-VI
     electrical properties of, 73.61.Ga
     optical properties of, 78.66.Hf
   superconducting, 74.78.-w
   thermal effects in, 68.60.Dv
   transport phenomena in, 73.50.-h
Thixotropy, 83.60.Pq
Thomas-Fermi model
   of atoms and molecules, 31.15.bt
   electron gas, 71.10.Ca
   in nuclear structure, 21.60.-n
Thyristors, 85.30.Rs
Tidal interactions (galaxies), 98.65.Fz
Tides
   atmospheric, 92.60.hh
   Earth, 91.10.Tq
   oceanic, *92.10.hb
Tight-binding methods (atomic physics), 31.15.aq
Time, measurement of, 06.30.Ft
Time-of-flight mass spectrometry
   in chemical analysis, 82.80.Rt
   instrumentation for, 07.75.+h
Time resolved spectroscopy, 78.47.jd, 78.47.D-
Time series analysis
   in astronomy, 95.75.Wx
   in nonlinear dynamics, 05.45.Tp
Tissue engineering, 87.85.Lf
```

```
Tissue response factors in treatment planning, 87.55.dh
Tissues, biological
   flow through, 47.63.Jd
Tissues and organs
   dielectric properties of, 87.19.rf
   fluid transport in, 87.19.rh
   impulse propagation in, 87.19.rp
   mechanical properties of, 87.19.R-
     contraction, 87.19.rj
     elastic properties, 87.19.rd
   structure of, 87.19.rm
Titan, 96.30.nd
Titanates, 77.84.Cg
T-J model, 74.20.-z
Tokamaks, 52.55.Fa
Tomography
   acoustic, *43.35.Wa, *43.60.Rw
   of Earth's interior, 91.35.Pn
   electrical impedance, 87.63.Pn
   in materials testing, 81.70.Tx
   in medical physics, 87.57.Q-
   neutron tomography
     neutron physics, 28.20.Pr
     in solid state structure determination, 61.05.Tv
     in medical imaging, 87.57.Va
   quantum, 03.65.Wj
   in seismology, 91.30.Jk
   SPECT, 87.57.uh
   ultrasonic, *43.35.Wa
Top quarks, 14.65.Ha
Topography
   Earth, 91.10.Jf
   Moon, 96.20.Dt
Topological excitations (Bose-Einstein condensation), 03.75.Lm
Topological phases (quantum mechanics), 03.65.Vf
Topology, 02.40.Pc
   algebraic, 02.40.Re
Topside region, ionosphere, 94.20.dl
Toroidal confinement devices, 52.55.Hc
Torque
   measurement of, 07.10.Pz
   in Newtonian mechanics, 45.20.da
```

```
Torsatrons, 52.55.Hc
Total energy calculations (condensed matter), 71.15.Nc
Touch (sensory systems), 87.19.lt
Townsend discharge, 52.80.Dy
Toys, physics of, 01.50.Wg
Trajectory models
   for atomic and molecular collisions, 34.10.+x
   for chemical kinetics, 82.20.Fd
Transducers
   acoustic, 43.38.+n, *43.38.-p
   general instrumentation for, 07.07.Mp
   for underwater sound, *43.30.Yj
Transfer functions, optical, 42.30.Lr
Transfer reactions
   deuterium-induced, 25.45.Hi
   heavy-ion-induced, 25.70.Hi
   nucleon-induced, 25.40.Hs
   unstable-nuclei-induced, 25.60.Je
Transient grating spectroscopy, 78.47.jj
Transistors
   bipolar, 85.30.Pq
   field effect, 85.30.Tv
Transition-metal compounds, electrical conductivity of, 72.80.Ga
Transition metals and alloys
   electric conductivity of, 72.15.Eb
   electronic structure of, 71.20.Be
Transition probabilities
   atomic, 32.70.Cs
   molecular, 33.70.Ca
   nuclear, 23.20.-g
Transition radiation
   by relativistic moving charges, 41.60.Dk
Transition state theory (chemical kinetics), 82.20.Db
Transition temperature variations (superconductivity), 74.62.-c
   chemical composition effects on, 74.62.Bf
   crystal defects effects on, 74.62.Dh
   disorder effects on, 74.62.En
   doping and substitution effects on, 74.62.Dh
   material synthesis effects on, 74.62.Bf
   pressure effects on, 74.62.Fj
Transmission coefficients, optical, 78.20.Ci
Transmission electron microscopy (TEM), 68.37.Lp
```

```
high-resolution transmission electron microscopy (HRTEM), 68.37.Og
   scanning transmission electron microscopy (STEM), 68.37.Ma
Transmission lines, 84.40.Az
Transonic flows, 47.40.Hg
Transportation, 89.40.-a
Transport dynamics
   of biomolecules, 87.15.hj
Transport processes
   classical, 05.60.Cd
   in gases, 51.10.+y
   in interfaces, 73.40.-c
   in metals and alloys, 72.15.-v, 72.25.Ba
   neutron, 28.20.Gd
   nonelectronic (see 66)
   in normal phase <sup>3</sup>He, 67.30.eh
   in normal phase <sup>4</sup>He, 67.25.bf
   in plasma, 52.25.Fi
   quantum, 05.60.Gg
   in quantum fluids, 67.10.Jn
   in semiconductors and insulators, 72.20.-i, 72.25.-b
     specific materials, 72.80.-r
   spin-polarized, 72.25.-b
   subcellular, 87.16.dp, 87.16.Uv, 87.16.Vy
   in superconductors, 74.25.F-
   in superfluid phase <sup>3</sup>He, 67.30.hb
   in superfluid phase <sup>4</sup>He, 67.25.dg
   in thin films, 73.50.-h, 73.61.-r
Trapped particles (magnetosphere), 94.30.Hn
Trapping, charge carriers
   in bulk matter, 72.20.Jv
   in thin films, 73.50.Gr
Traps, ion, 37.10.Ty
Traveling-wave tubes, 84.40.Fe
Traversal time (quantum mechanics), 03.65.Xp
Treatment planning, 87.55.D-
   dose-volume analysis in, 87.55.dk
   optimization techniques in, 87.55.de
   tissue response in, 87.55.dh
Treatment strategy (medical physics), 87.55.-x
   Monte Carlo methods in, 87.55.K-
   quality assurance in, 87.55.Qr
   radiation monitoring in, 87.55.N-
```

```
record and verify systems in, 87.55.T-
   safety in, 87.55.N-
   simulation of, 87.55.Gh
   treatment planning, 87.55.D-
Triassic period, *91.70.dg
Triboelectricity, 41.20.Cv
Tribology
   rheology of, 83.50.Lh
   of solids, 62.20.Qp
   in structural mechanics, 46.55.+d
Triboluminescence, 78.60.Mq
Trions, 71.35.Pq
Triple points, 64.60.Kw
Triplet state, 31.50.Df, 33.50.-j
Triton-induced reactions, 25.55.-e
Tritons, 27.10.+h
Tropical regions, 93.30.Vs
   meteorology of, 92.60.Ox
Troposphere, 92.60.hf
Tsunamis, 91.30.Nw, *92.10.hl
Tube flow, 47.60.-i
Tube theories (rheology), 83.10.Kn
Tully-Fisher relationship (astrophysics), 98.62.Ve
Tundra, 92.40.Vq, *92.40.vt
Tunneling
   in Bose-Einstein condensation, 03.75.Lm
   of defects, 66.35.+a
   in interface structures, 73.40.Gk
   macroscopic, in magnetic systems, 75.45.+j
   in quantum Hall effects, 73.43.Jn
   quantum mechanics of, 03.65.Xp, 03.75.Lm
   single particle tunneling (superconductors), 74.55.+v
   Josephson effects, 74.50.+r
Tunnel junction devices, 85.30.Mn
Turbidity currents (marine geology), 91.50.Jc
Turbines
   hydroturbines, 88.60.K-
     cross-flow turbines, 88.60.kc
     Francis hydropower turbines, 88.60.kf
     free-flow turbines, 88.60.kj
     impulse turbines, 88.60.km
      Pelton turbines, 88.60.kp
```

```
propeller turbines, 88.60.kr
     reaction turbines, 88.60.kt
   wind turbines, 88.50.G-
     components, 88.50.gm
     modeling, design, 88.50.gj
     research and development, 88.50.gg
     testing of, 88.50.gp
Turbulence
   atmospheric, 92.60.hk
   atmospheric optics, 42.68.Bz
   fluid, 47.27.-i
   meteorological, 92.60.hk
   oceanic, 92.10.Lq
   plasma, 52.35.Ra
   space plasma, 94.05.Lk
Turbulent diffusion, 47.27.tb
Turbulent flows, 47.27.-i
   boundary-free, 47.27.W-
   boundary layer, 47.27.nb
   channel flow, 47.27.nd
   coherent structures, 47.27.De
   mixing layers, 47.27.wj
   simulation and modeling, 47.27.E-
   transition to turbulence, 47.27.Cn
   wall-bounded, 47.27.N-
Tutorial papers, 01.30.Rr
Twinning, 61.72.Mm
Two-fluid theory (superconductivity), 74.20.De
ULSI, 85.40.-e
Ultracold gases, 67.85.-d
   degenerate Fermi gases, 67.85.Lm
   mixtures of Bose and Fermi gases, 67.85.Pq
   trapped gases, 67.85.-d
Ultrafast processes
   in dynamics of biomolecules, 87.15.ht
   in femtochemistry, 82.53.-k
   magnetization dynamics, 75.78.Jp
   in nonlinear optics, 42.65.Re
   in solid state dynamics, 78.47.J-
Ultrafast spectroscopy (<1psec), 78.47.J-
   in femtochemistry, 82.53.-k
   free polarization decay in, 78.47.js
```

```
optical nutation in, 78.47.jp
   photon echoes in, 78.47.jf
   quantum beats in, 78.47.jm
   time-resolved spectroscopy in, 78.47.D-
   transient grating spectroscopy in, 78.47.jj
Ultrasonic relaxation, 62.80.+f
   superconductors, 74.25.Ld
Ultrasonic testing, *43.35.Zc, 81.70.Cv
Ultrasonic tomography, *43.35.Wa
Ultrasonic velocity measurement, *43.35.Ae, *43.35.Bf, *43.35.Cg
Ultrasonography
   Doppler imaging, 87.63.dk
   ultrasonographic imaging, 87.63.dh
Ultrasound, *43.35.-c, 43.35.+d
   application to biology, *43.80.-n, 43.80.+p
   effects on biological systems, 87.50.Y-
   medical uses of, *43.35.Wa, *43.80.Qf, 87.50.yt, 87.63.D-
Ultraviolet detectors, 42.79.Pw, 85.60.Gz
Ultraviolet radiation
   in astronomical observations, 95.85.-e
   effects on biological systems, 87.50.W-
   in photochemistry, 82.50.Hp
   in plasma, 52.25.Os
   scattering of, in biophysics, 87.64.Cc
   surface irradiation effects of, 61.80.Ba
Ultraviolet spectroscopy
   atomic, 32.30.Jc
   in chemical analysis, 82.80.Dx
   instruments for, 07.60.Rd
   molecular, 33.20.Lg, 33.20.Ni
   in solids and liquids, 78.40.-q
Underwater
   acoustics, *43.30.-k, 43.30.+m, 92.10.Vz
    morphology, 91.50.Ga
Undulator radiation, 41.60.-m
Unified field theories
   gravity in more than four dimensions, 04.50.-h
   models beyond the standard models, 12.60.-i
Units and standards, 06.20.F-
Universe
   Early, 98.80.Cq
   origin and formation of, 98.80.Bp
```

```
Upsilon mesons, 14.40.Nd
```

Uranus, 96.30.Pj

Uranian satellites, 96.30.Qk

Urban planning and development, 89.65.Lm

Vacancies, in crystals, 61.72.jd

Vacuum chambers, 07.30.Kf

Vacuum gauges, 07.30.Dz

Vacuum microelectronics, 85.45.-w

Vacuum production, 07.30.-t

Vacuum tubes, 84.47.+w

Valence-bond method

in electronic structure of atoms and molecules, 31.15.xw

in electronic structure of solids, 71.15.Ap

Valence fluctuation

in diamagnetism and paramagnetism, 75.20.Hr

in magnetically ordered materials, 75.30.Mb

Vapor-liquid transitions, 64.70.F-

Vapor phase epitaxy, 81.15.Kk

Vapor-solid transitions, 64.70.Hz

Variable stars, 97.30.-b

Variational methods

in atomic physics, 31.15.xt

in classical mechanics, 45.10.Db

in continuum mechanics, 46.15.Cc

in elementary particle physics, 11.80.Fv

in general relativity, 04.20.Fy

Varistors, 84.32.Ff

Vegetable oils as fuels from biomass, 88.20.ft

Velocimeters, laser Doppler, 42.79.Qx

Velocity, measurement of, 06.30.Gv

Veneziano model, 11.55.Jy, 12.40.Nn

Venus, 96.30.Ea

Very large scale integration (VLSI), 85.40.-e

Vesicles, 82.70.Uv, 87.16.D-

VHF radiation

atmospheric emissions, 92.60.hx

Vibrating structures, \*43.20.Tb

Vibrational constants, molecular, 33.15.Mt

Vibrational energy transfer, 34.50.Ez

Vibrational levels

macromolecular, 36.20.Ng

molecular, 33.20.Tp

```
nuclear, 21.60.Ev
Vibration and tactile senses, *43.64.Vm, *43.66.Wv
Vibration isolation, 07.10.Fq
Vibration measurement, 07.10.-h, 46.40.-f
Vibration-rotational analysis, 33.20.Vq
Vibration-rotation constants, 33.15.Mt
Vibrations
   of adsorbates, 68.43.Pq
   in crystal lattices, 63.70.+h
   in disordered systems, 63.50.-x
   mechanical, 46.40.-f
   in mechanical properties of solids, 62.30.+d
   at solid surfaces and interfaces, 68.35.Ja
   in structural acoustics, *43.40.-r, 43.40.+s
Vibronic interactions, 33.20.Wr
Video coding, 42.30.Va
Video devices, educational, 01.50.ff
Viral diseases, 87.19.xd
Viscoelasticity
   in continuum mechanics of solids, 46.35.+z
   in rheology, 83.60.Bc, 83.60.Df
Viscometers, 47.80.-v
Viscometry, 83.85.Jn
Viscoplasticity
   in continuum mechanics, 46.35.+z
   in rheology, 83.60.La
Viscosity, 66.20.-d
   experimental studies of, 66.20.Ej
   of gases, 51.20.+d
   shear rate dependent, 83.60.Fg
   theory and modeling of, 66.20.Cy
Viscous instability, 47.20.Gv
Visible and ultraviolet spectrometers, 07.60.Rd
Visible radiation
   in astronomical observations, 95.85.Kr
   effects on biological systems, 87.50.W-
   in plasma, 52.25.Os
   scattering of, in biophysics, 87.64.Cc
   surface irradiation effects of, 61.80.Ba
Visible spectra
   of atoms, 32.30.Jc
   of molecules, 33.20.Kf
```

```
of solids and liquids, 78.40.-q
Vision
   computer, robotic, 42.30.Tz
   information processing in, 87.19.lt
   physiological, 42.66.-p
Visual imaging, 87.63.L-
Visual perception, 42.66.Si
Vitamins, 87.14.Pq
Vitroceramics, 81.05.Pj
Vlasov equation, 52.20.-j, 52.25.Fi, 52.65.Ff
VLSI, 85.40.-e
Vocalization (motor systems), 87.19.lu
Voids (crystal defects), 61.72.Qq
Volcanoclastic deposits, 91.40.Uc
Volcanoes
   hazards and risks, 91.40.Zz
   remote sensing of, 91.40.Yt
   seismology of, 91.30.Tb
Volcanology, 91.40.-k
   atmospheric effects, 91.40.Dr, 92.60.Zc
   intraplate processes, 91.40.Ta
   lava rheology, 91.40.Hw
   magma bodies, 91.40.La
   thermodynamics in, 91.40.Pc
   volcanic gases, 91.40.Vg
Voltage measurement, 84.37.+q
    high-voltage technology, 84.70.+p
Volume measurement, 06.30.Bp
Vortex dynamics (fluid flow), 47.32.C-
Vortex phases (superconductivity), 74.25.Uv
Vortex pinning (superconductivity), 74.25.Wx
Vortices
   in Bose-Einstein condensation, 03.75.Lm
   in inviscid laminar flows, 47.15.ki
   in magnetic thin films, 75.70.Kw
   in plasma, 52.35.We
   in rotational flows, 47.32.C-
   in superconductivity
     vortex phases, 74.25.Uv
     vortex pinning, 74.25.Wx
   in superfluid helium-3, 67.30.he
   in superfluid helium-4, 67.25.dk
```

```
W bosons, 14.70.Fm
Wakes
   laminar, 47.15.Tr
   spacecraft, 94.05.Jq
   turbulent flows, 47.27.wb
Water cycles, global, 92.70.Ly
Water pollution, 89.60.-k, 92.20.Ny
Water quality
   ground water, 92.40.Kf, *92.40.kc
   surface water, 92.40.Qk, *92.40.qc
Water resources, 92.40.Qk
Water supply, 92.40.Qk, *92.40.qf
Water transportation, 89.40.Cc
Wave equations
   bound states, 03.65.Ge
   relativistic, 03.65.Pm
Wave fronts, 42.15.Dp
Waveguides
   acoustical, *43.20.Mv
   optical (see Optical waveguides)
   plasma-filled, 52.40.Fd
   radiowave and microwave, 84.40.Az
Wave optics, 42.25.-p
Weak interactions
   in beta decay, 23.40.Bw
   electromagnetic corrections, 13.40.Ks
   models of, 12.15.-y
Weak localization
   in electronic conduction, 72.15.Rn
   electron states, 73.20.Fz
Weapons systems, 89.20.Dd
Wear
   materials treatment effects on, 81.40.Pq
   mechanics, 46.55.+d
Weather analysis and prediction, 92.60.Wc
Wedges and compensators
   for beam intensity modifications (medical physics), 87.56.ng
Wedges (radiation therapy), 87.56.ng
Weighing, 06.30.Dr
Weinberg-Salam model, 12.15.-y
Weissenberg effect (rheology), 83.60.Hc
Welding, 81.20.Vj
```

```
workshop techniques, 06.60.Vz
Westheimer method, 31.15.bu
Wetlands, 92.40.Yy
Wetting
   in liquid crystals, 61.30.Hn
   in liquid-solid interfaces, 68.08.Bc
Whiskers, 68.70.+w
Whistler waves
   in magnetosphere, 94.30.Tz
   in plasma, 52.35.Hr
White dwarfs, 97.20.Rp
Wiberg method, 31.15.bu
Wiggler magnets
   particle beam focusing, 41.85.Lc
Wind energy
   electricity generation, 88.50.Mp
   social issues, 88.50.Xy
   wind farms, 88.50.J-
     large-scale wind farms, 88.50.jn
     off-shore wind farms, 88.50.jp
     small-scale wind farms, 88.50.jj
   wind turbines, 88.50.G-
     components, 88.50.gm
     modeling, design, 88.50.gj
     research and development, 88.50.gg
     testing of, 88.50.gp
Winds, 92.60.Gn
Wiring, 84.32.Hh
Wood (rheology), 83.80.Lz
Work functions
   electronic structure (thin films), 73.30.+y
   thermal properties of solids, 65.40.gh
Work hardening, 81.40.Ef
Workshop techniques
   laboratory, 06.60.Vz
   optical, 42.86.+b
World Wide Web, 89.20.Hh
XANES
   in structure determination, 61.05.cj
Xerography, 07.68.+m
X-ray absorption spectroscopy, 78.70.Dm
   in structure determination, 61.05.cj
```

```
X-ray beams, 41.50.+h
X-ray binary stars, 97.80.Jp
```

X-ray bursts, 98.70.Qy

X-ray crystallography, 61.05.C-

X-ray detectors, 07.85.Fv superconducting, 85.25.Oj

X-ray diffraction

in biophysics, 87.64.Bx

in crystal structure, 61.05.cp

in defect structure, 61.72.Dd

X-ray diffractometers, 07.85.Nc

X-ray dosimetry, 87.53.Bn

X-ray emission spectra, 78.70.En

X-ray fluorescence, 78.70.En

X-ray gratings, 07.85.Fv

X-ray imaging, 87.59.-e

angiography, 87.59.Dj

fluoroscopy, 87.59.C-

mammography, 87.59.E-

x-ray radiography, 87.59.B-

X-ray lasers, 42.55.Vc

X-ray lithography, 85.40.Hp

X-ray microscopes, 07.85.Tt

X-ray microscopy, 68.37.Yz

X-ray mirrors, 07.85.Fv

X-ray optics, 41.50.+h

X-ray photoelectron diffraction, 61.05.js

X-ray photoelectron spectra

of molecules, 33.60.+q

in surface analysis, 79.60.-i

X-ray radiation effects, 61.80.Cb

in biology, 87.53.-j

in photochemistry, 82.50.Kx

X-ray radiography, 87.59.B-

computed radiography, 87.59.bd

digital radiography, 87.59.bf

X-ray reflectometry

in crystal structure, 61.05.cm

X rays

emission, absorption, and scattering in plasmas, 52.25.Os

in plasma diagnostics, 52.70.La

radiation monitoring and safety of, 87.55.N-

```
spin arrangement determinations with, 75.25.-j
X-ray scattering
   interactions with matter, 78.70.Ck
   in structure determination, 61.05.cf
X-ray sources
   galactic and stellar, 97.80.Jp, 98.70.Qy
   hard, 52.59.Px
   instrumentation for, 07.85.Fv
   from laser-plasma interactions, 52.38.Ph
X-ray spectrometers, 07.85.Nc
X-ray spectroscopy
   in astronomical observations, 95.85.Nv
   in atoms, 32.30.Rj
   in biophysics, 87.64.kd
   in chemical analysis, 82.80.Ej
   EXAFS
     in biophysics, 87.64.kd
     in structure determination, 61.05.cj
   molecules, 33.20.Rm
   nuclear physics, 29.30.Kv
X-ray standing waves, 68.49.Uv
X-ray telescopes, 95.55.Ka
X-ray topography (crystal defects), 61.72.Ff
Yang-Mills fields, 12.10.-g, 12.15.-y
Yield stress, 62.20.fg
Yield stress (rheology), 83.60.La
Young's modulus, 62.20.de, 81.40.Jj
Yrast states, 21.10.Re
Z bosons, 14.70.Hp
Zeeman effect
   in atoms, 32.60.+i
   in condensed matter, 71.70.Ej
   in molecules, 33.57.+c
Zener diodes, 85.30.Mn
Zeolites
   catalysis in, 82.75.Qt
   clusters in, 82.75.Vx
   molecule migration in, 82.75.Jn
   properties of molecules in, 82.75.Mj
   reactions in, 82.33.Jx
Zero gravity experiments (materials testing), 81.70.Ha
ZnO films (dielectric films), 77.55.hf
```

Zodiacal light, 96.50.Dj
Zone melting and refining, 81.10.Fq
Zone plates, 42.79.Ci
Z-pinches
devices, 52.58.Lq
wire array, 52.59.Qy