

GUIDELINES FOR PRE SECTION SELECTION

(Revised December 2007)

Sections are listed below, together with topics and PACS numbers. The first, or principal, PACS number chosen for an article should correspond to the appropriate section and should be selected from those indicated in the section scheme below. Please note that the more specific codes, indicating a finer level of detail, supersede the general category codes. This listing of PACS numbers is not complete, for not all of the more specific PACS codes are listed. Unless otherwise indicated, a general code in this list (which includes a minus sign) implies that the more specific codes are also included. An asterisk (*) after a PACS number refers to all categories following the decimal point. Complete PACS listings may be accessed electronically at <http://publish.aps.org/PACS/>.

Part 1: Statistical, Soft Matter, and Biological Physics

Statistical physics

- 02.50.-r Probability theory, stochastic processes, and statistics
- 05.20.-y Classical statistical mechanics
- 05.30.-d Quantum statistical mechanics
- 05.40.-a Fluctuation phenomena, random processes, noise, and Brownian motion
- 05.50.+q Lattice theory and statistics (Ising, Potts, etc.)
- 05.60.Cd Classical transport
- 05.60.Gg Quantum transport
- 05.70.-a Thermodynamics
- 05.90.+m Other topics in statistical physics, thermodynamics, and nonlinear dynamical systems
- 46.65.+g Random phenomena and media
- 64.10.+h General theory of equations of state and phase equilibria
- 64.60.-i General studies of phase transitions (except 64.60.Qb)
- 67.10.Fj Quantum statistical theory (Quantum fluids)
- 75.10.Hk Classical spin models (Models of magnetic ordering)

Equilibrium and linear transport properties of fluids

- 44.05.+e Analytical and numerical techniques (heat transfer)
- 44.10.+i Heat conduction
- 44.15.+a Channel and internal heat flow
- 44.40.+a Thermal radiation
- 44.90.+c Other topics in heat transfer
- 47.35.-i Hydrodynamic waves
- 47.45.-n Rarefied gas dynamics
- 51.10.+y Kinetic and transport theory of gases
- 51.20.+d Viscosity, diffusion, and thermal conductivity (gases)
- 51.30.+i Thermodynamic properties, equations of state (gases)
- 51.35.+a Mechanical properties; compressibility (gases)
- 51.40.+p Acoustical properties (gases)
- 51.90.+r Other topics in the physics of gases
- 61.20.-p Structure of liquids
- 65.20.-w Thermal properties of liquids
- 66.10.-x Diffusion and ionic conduction in liquids
- 66.20.-d Viscosity of liquids; diffusive momentum transport
- 66.25.+g Thermal conduction in nonmetallic liquids

Granular materials

- 45.05.+x General theory of classical mechanics of discrete systems
- 45.70.-n Granular systems
- 81.05.Rm Porous materials; granular materials
- 83.80.Fg Granular solids (rheology)

Colloidal dispersions, suspensions, and aggregates

- 61.43.Hv Fractals; macroscopic aggregates (including diffusion-limited aggregates)
- 82.33.Ln Reactions in sol gels, aerogels, porous media
- 82.70.-y Disperse systems; complex fluids
- 83.80.Hj Suspensions, dispersions, pastes, slurries, colloids (rheology)
- 83.80.Iz Emulsions and foams (rheology)
- 83.80.Kn Physical gels and microgels (rheology)

Structured and complex fluids

- 46.35.+z Viscoelasticity, plasticity, viscoplasticity
- 61.* (fluids only)
- 62.* (fluids only)
- 64.70.D- Solid-liquid transitions
- 64.70.F- Liquid-vapor transitions
- 64.70.Ja Liquid-liquid transitions
- 64.70.P- Glass transitions of specific systems
- 64.70.Q- Theory and modeling of the glass transition
- 64.75.-g Phase equilibria
- 78.55.Bq Liquids (photoluminescence)
- 82.45.-h Electrochemistry and electrophoresis
- 83.10.-y Fundamentals and theoretical (rheology)
- 83.50.-v Deformation and flow (rheology)
- 83.80.Gv Electro- and magnetorheological fluids (rheology)
- 83.80.Qr Surfactant and micellar systems, associated polymers (rheology)
- 83.85.-c Techniques and apparatus (rheology)

Films, interfaces, and crystal growth

- 64.60.Q- Nucleation
- 68.03.-g Gas-liquid and vacuum-liquid interfaces
- 68.05.-n Liquid-liquid interfaces
- 68.08.-p Liquid-solid interfaces
- 68.15.+e Liquid thin films
- 68.18.-g Langmuir-Blodgett films on liquids
- 68.37.-d Microscopy of surfaces, interfaces, and thin films
- 68.43.-h Chemisorption/physisorption: adsorbates on surfaces
- 68.47.Pe Langmuir-Blodgett films on solids, polymers on surfaces, biological molecules on surfaces
- 68.70.+w Whiskers and dendrites (growth, structure, and nonelectronic properties)
- 81.10.-h Methods of crystal growth; physics of crystal growth
- 81.15.Aa Theory and models of film growth
- 81.15.Lm Liquid phase epitaxy; deposition from liquid phases (melts, solutions, and surface layers on liquids)
- 82.60.Nh Thermodynamics of nucleation
- 82.65.+r Surface and interface chemistry; heterogeneous catalysts at surfaces

Liquid crystals

- 42.70.Df Liquid crystals (optical materials)
- 61.25.H- Macromolecular and polymers solutions; polymer melts
- 61.30.-v Liquid crystals
- 64.70.M- Transitions in liquid crystals
- 77.84.Nh Liquids, emulsions, and suspensions; liquid crystals
- 83.80.Xz Liquid crystals: nematic, cholesteric, smectic, discotic, etc. (rheology)

Polymers

- 36.20.-r Macromolecules and polymer molecules
- 61.25.H- Macromolecular and polymer solutions; polymer melts
- 61.41.+e Polymers, elastomers, and plastics
- 61.82.Pv Polymers, organic compounds (radiation effects)
- 73.61.Ph Polymers, organic compounds (electrical properties of thin films)
- 78.30.Jw Organic compounds, polymers (infrared and Raman spectra)
- 78.40.Me Organic compounds and polymers (visible and ultraviolet absorption and reflection spectra)
- 82.35.-x Polymers: properties; reactions; polymerization
- 83.80.Rs Polymer solutions (rheology)
- 83.80.Sg Polymer melts (rheology)
- 83.80.Tc Polymer blends (rheology)
- 83.80.Uv Block copolymers (rheology)

Biological physics

- 42.66.-p Physiological optics
- 43.64.+r Physiological acoustics
- 43.70.+i Speech production
- 43.71.+m Speech perception
- 43.80.+p Bioacoustics
- 47.63.mh Transport processes and drug delivery
- 82.37.Rs Single molecule manipulation of proteins and other biological molecules
- 82.39.-k Chemical kinetics in biological systems
- 82.53.Ps Femtosecond probing of biological molecules
- 82.56.Pp NMR of biomolecules
- 83.80.Lz Physiological materials (e.g., blood, collagen, etc.)
- 87.10.-e General theory and mathematical aspects
- 87.14.-g Biomolecules: types
- 87.15.-v Biomolecules: structure and physical properties
- 87.16.-b Subcellular structure and processes
- 87.17.-d Cell processes
- 87.18.-h Biological complexity
- 87.19.-j Properties of higher organisms
- 87.23.-n Ecology and evolution
- 87.50.-a Effects of electromagnetic and acoustic fields on biological systems
- 87.53.-j Effects of ionizing radiation on biological systems
- 87.57.-s Medical imaging
- 87.59.-e X-ray imaging
- 87.61.-c Magnetic resonance imaging
- 87.64.-t Spectroscopic and microscopic techniques in biophysics and medical physics
- 87.80.-y Biophysical techniques (research methods)
- 87.85.-d Biomedical engineering
- 87.90.+y Other topics in biological and medical physics

Part 2: Nonlinear and Plasma Physics, Fluid Dynamics, and Related Topics

Interdisciplinary physics

- 05.65.+b Self-organized systems
- 46.50.+a Fracture mechanics, fatigue, and cracks (continuum mechanics of solids)
- 62.20.M- Structural failure of materials (mechanical properties of solids)
- 78.60.Ps Chemiluminescence
- 81.40.Pq Friction, lubrication, and wear
- 82.20.-w Chemical kinetics and dynamics
- 82.30.-b Specific chemical reactions; reaction mechanisms
- 82.33.Tb Atmospheric chemistry
- 82.40.Ck Pattern formation in reactions with diffusion, flow, and heat transfer
- 82.50.-m Photochemistry
- 82.60.-s Chemical thermodynamics (except 82.60.Nh)
- 84.35.+i Neural networks (electronics)
- 89.40.-a Transportation
- 89.65.-s Social and economic systems
- 89.75.Da Systems obeying scaling laws
- 89.75.Fb Structures and organization in complex systems
- 89.75.Hc Networks and genealogical trees
- 89.90.+n Other topics of general interest to physicists

Chaos and pattern formation

- 05.45.-a Nonlinear dynamics and chaos (except 05.45.Yv)
- 82.40.Bj Oscillations, chaos, and bifurcations
- 89.75.Kd Patterns (complex systems)

Fluid dynamics

- 44.20.+b Boundary layer heat flow
- 44.25.+f Natural convection (heat transfer)
- 44.27.+g Forced convection (heat transfer)
- 44.30.+v Heat flow in porous media
- 47.10.-g General theory in fluid dynamics
- 47.15.-x Laminar flows
- 47.20.-k Flow instabilities
- 47.27.-i Turbulent flows
- 47.32.-y Vortex dynamics; rotating fluids
- 47.40.-x Compressible flows; shock waves
- 47.50.-d Non-Newtonian fluid flows
- 47.51.+a Mixing
- 47.52.+j Chaos in fluid dynamics
- 47.53.+n Fractals in fluid dynamics
- 47.54.-r Pattern selection; pattern formation (fluid dynamics)
- 47.55.-t Multiphase and stratified flows
- 47.56.+r Flows through porous media
- 47.57.-s Complex fluids and colloidal systems
- 47.60.-i Flows phenomena in quasi-one-dimensional systems

- 47.61.-k Micro- and nano- scale flow phenomena
- 47.63.-b Biological fluid dynamics (except 47.63.mh)
- 47.65.-d Magnetohydrodynamics and electrohydrodynamics
- 47.70.-n Reactive and radiative flows
- 47.75.+f Relativistic fluid dynamics
- 47.90.+a Other topics in fluid dynamics
- 78.60.Mq Sonoluminescence, triboluminescence

Plasma physics

- 51.50.+v Electrical properties (ionization, breakdown, electron and ion mobility, etc.) (gases)
- 51.60.+a Magnetic properties (gases)
- 51.70.+f Optical and dielectric properties (gases)
- 52.20.-j Elementary processes in plasma
- 52.25.-b Plasma properties
- 52.27.-h Basic studies of specific kinds of plasmas
- 52.30.-q Plasma dynamics and flow
- 52.35.-g Waves, oscillations, and instabilities in plasmas and intense beams
- 52.38.-r Laser-plasma interactions
- 52.40.-w Plasma interactions (nonlaser)
- 52.50.-b Plasma production and heating
- 52.55.-s Magnetic confinement and equilibrium
- 52.57.-z Laser inertial confinement
- 52.58.-c Other confinement methods
- 52.59.-f Intense particle beams and radiation sources
- 52.65.-y Plasma simulation
- 52.70.-m Plasma diagnostic techniques and instrumentation
- 52.72.+v Laboratory studies of space- and astrophysical-plasma processes
- 52.75.-d Plasma devices
- 52.80.-s Electric discharges
- 52.90.+z Other topics in physics of plasmas and electric discharges
- 94.05.-a Space plasma physics
- 94.20.Fg Plasma temperature and density (ionosphere)
- 94.20.wc Plasma motion; plasma convection; particle acceleration (ionosphere)
- 94.20.wf Plasma waves and instabilities (ionosphere)
- 94.20.wl Plasma interactions with dust and aerosols (ionosphere)
- 94.30.cq MHD waves, plasma waves, and instabilities (magnetosphere)
- 94.30.cs Plasma motion; plasma convection (magnetosphere)
- 94.30.ct Plasma sheet (magnetosphere)
- 94.30.cv Plasmasphere (magnetosphere)
- 94.80.+g Instrumentation for space plasma physics, ionosphere, and magnetosphere
- 94.90.+m Other topics in space plasma physics, physics of the ionosphere and magnetosphere
- 95.30.Qd Magnetohydrodynamics and plasmas (astrophysics)
- 96.25.Qr Interactions with solar wind plasma and fields (comets and small bodies)
- 96.25.St Plasma and MHD instabilities (comets and small bodies)
- 96.50.Ci Solar wind plasma; sources of solar wind
- 96.50.Tf MHD waves; plasma waves, turbulence (interplanetary physics)

Physics of beams

Articles devoted to the physics of beams now appear in *Physical Review Special Topics - Accelerators and Beams*, <http://prst-ab.aps.org/>.

Classical physics

03.50.-z	Classical field theories
05.45.Yv	Solitons
41.20.-q	Applied classical electromagnetism
41.90.+e	Other topics in electromagnetism; electron and ion optics
42.68.-w	Atmospheric and ocean optics
43.20.+g	General linear acoustics
43.25.+y	Nonlinear acoustics
43.28.+h	Aeroacoustics and atmospheric sound
43.30.+m	Underwater sound
43.35.+d	Ultrasonics, quantum acoustics, and physical effects of sound
43.38.+n	Transduction; acoustical devices for the generation and reproduction of sound
43.40.+s	Structural acoustics and vibration
43.50.+y	Noise: its effects and control
43.55.+p	Architectural acoustics
43.58.+z	Acoustical measurements and instrumentation
43.60.+d	Acoustic signal processing
43.72.+q	Speech processing and communication systems
43.90.+v	Other topics in acoustics
45.20.-d	Formalisms in classical mechanics
45.30.+s	General linear dynamical systems
45.80.+r	Control of mechanical systems
46.25.Cc	Theoretical studies (static elasticity)
46.40.-f	Vibrations and mechanical waves
46.70.-p	Application of continuum mechanics to structures
46.90.+s	Other topics in continuum mechanics of solids

Computational physics

02.60.-x	Numerical approximation and analysis
02.70.-c	Computational techniques; simulations
05.10.-a	Computational methods in statistical physics and nonlinear dynamics
07.05.-t	Computers in experimental physics
45.10.-b	Computational methods in classical mechanics
46.15.-x	Computational methods in continuum mechanics
47.11.-j	Computational methods in fluid dynamics
95.75.Mn	Image processing (including source extraction)
95.75.Pq	Mathematical procedures and computer techniques
95.75.Wx	Time series analysis, time variability