

Keywords of section

2004-2008

Section 01

Mathematics and Interactions of mathematics

- Logic, discrete maths, combinatorics, algorithmics, symbolic computations, mathematical aspects of computer science, cryptography
- Algebra, number theory, group theory, representation theory, algebraic geometry and arithmetic geometry
- Geometry, topology, dynamical systems, ergodic theory
- Real and complex analysis, harmonic analysis, functional analysis
- Partial differential equations, optimization, control, signal processing
- Probability theory, stochastic process and algorithms, statistics, control data
- Numerical analysis, approximation, numerical simulation, scientific computing
- Modelisation and interactions of maths with, in particular, mechanics, physics, biology, computer sciences, telecommunications, chemistry, environment, economy and industrial applications
- History of mathematics

Section 02

Physical theories: methods, models and applications

- Fundamental interactions and laws: elementary particles, gravitation, astrophysics, cosmology
- Mathematical and statistical physics
- Systems with a large number of degrees of freedom in nuclear physics and in solid-state physics
- Plasmas and fluids, nonlinear physics, soft matter physics
- Interfaces: algorithmics and complexity, simulation and massive computing, quantum computing, cognitive sciences, biophysics, econophysics

Section 03

Particles, nuclei, interactions: from the laboratory to the cosmos

- Particle physics
- Nuclear Physics
- Fundamental interactions and elementary particles
- Particle Astrophysics and Cosmology
- Radiation and particle detectors, associated electronics and massive data treatment
- Nuclear energy and related topics
- Cross-disciplinary applications, for instance nuclear imaging
- Accelerators

Section 04

Atoms and molecules-Lasers and optics- Hot plasmas

- Fundamental processes in quantum physics; atomic physics, cold atoms, quantum gases

- Molecules and clusters, free, adsorbed on surfaces or inside dense phases: structure and dynamics; applications to chemical physics
- Environment and astrophysics
- Collisions, reactive processes, electronic reordering, interactions with surfaces
- Hot plasmas; spectroscopy in plasmas, non linear physics, chaos and turbulence in plasmas; surface-plasma interaction, ion physics
- Thermonuclear (magnetic and inertial) fusion for energy production
- Lasers, nonlinear optics, propagation, metrology
- Optics in solids, materials for optics, nanooptics, optical investigation of biological materials

Section 05

Condensed matter physics: structure and dynamics

- Crystals, glass, liquids
- Divided matter, inhomogeneous matter
- Fully integrated systems, isolated objects
- Structures, phase transitions, defects, disorder, correlated properties
- Surfaces and interfaces, growth, self-organisation, micro-nano- heterostructures
- Instabilities, morphogenesis, non regularity-induced physics
- Fundamental excitations, vibrations
- Materials under extreme conditions
- Physics and mechanical properties (plasticity, tribology, ...)
- Instrumentation and experimental methods
- Theory, models, numerical methods

Section 06

Condensed matter physics: structures and electronic properties

- Magnetism and nanomagnetism, materials
- Highly correlated fermions, superconductivity, quantum fluids
- Semiconductors, heterostructures, quantum dots
- Low dimensionality-induced effects, nanostructures
- Mesoscopic physics, molecular electronics, quantum information physics with extreme conditions
- Large scale facilities
- Theory, models, numerical methods

Section 07

Information Science and Technology (computer science, control, signal and communication)

- Algorithms, combinatorics, formal calculus
- Programming and software engineering
- Architecture of components, machines and systems
- Networks, distributed systems and parallelism
- Telecommunications: coding, compression, transmission

- Databases and data retrieval
- Artificial intelligence: reasoning, deciding, learning
- Modeling, analysis, control and monitoring of dynamical systems
- Verification, safety, security of systems and data
- Signal, speech and image processing (analysis, interpretation, synthesis)
- Robotics, production systems and connected machines
- Human-system interface, perception, cognition
- Virtual reality: simulation of physical systems, visualisation of information

Section 08

Micro and Nanotechnologies, Electronics, Photonics, Electromagnetism, Electrical Engineering

- Micro and Nanotechnologies, smart materials, micro and nano-characterization
- Self assembling, Nanosystems
- Thin films and heterostructures, surface functionalization
- Heterogeneous modelling and design- multi physics and multi scale approach
- Innovative devices and circuits for electronics, optoelectronics and photonics
- New device and circuit architecture from RF to THz
- Smart antennas
- Devices and circuits for Electrical engineering
- Materials, Devices and Circuits for large scale electronics
- System and materials for information processing and storage
- Energy storage and energy scavenging
- Sensors and Actuators
- MEMS, MOEMS, BioMEMS
- System on Chip, System in Package, 3D integration, smart dust
- Reliability

Section 09

Materials and structural mechanics and engineering. Solids mechanics. Acoustics

- Continuous media, heterogeneities, discontinuous systems
- Waves, non destructive testing and evaluation
- Physical, perceptive and human acoustics
- Structural dynamics, active control
- Structures, civil engineering, geomechanics
- Structural and functional materials: processing, shape forming and machining
- Behavior of granular media, porous media
- Tribology, surfaces and interfaces
- Mechanical engineering, microsystems, mechanical systems, production systems
- Biomechanics, mechanics of living tissues
- Multiscale approaches, multiphysics coupling and inverse problems

Section 10

Fluid and reactive media: transport, transfer, transform processes

- Fluid mechanics and turbulence
- Multiphase flows
- Active control
- Reactive media: combustion, cold plasmas and lasers
- Treatment and elaboration of materials

- Heat transfer, microscale heat transfer and radiation
- Coupled transfer and systemic analysis
- Energy and chemical engineering, clean processes, environment
- Thermodynamics and chemical kinetics
- Multiscale, multiphysics analysis and inverse problems

Section 11

Supramolecular and macromolecular systems: properties, functions and engineering

- Engineering, synthesis and properties of molecular, supramolecular and macromolecular species
- Physics and physical chemistry of self-assemblies (colloids, liquid crystals, amphiphiles, surfaces and interfaces)
- Polymerisation processes and polymer processing
- Physics and chemistry of biological objects, biological macromolecules and assemblies
- Polymer materials and biomaterials

Section 12

Molecular architecture: Synthesis, mechanisms and properties

- Multistep synthesis and bioactive compounds
- Procedures and concepts of organic synthesis
- Heterochemistry and organometallic
- Catalytic processes for organic synthesis
- Molecular materials and nanostructures
- Supramolecular chemistry and self assembly
- Physical Organic Chemistry

Section 13

Physical Chemistry: molecules, environment

- Elementary processes (activation, excitation, electron transfer...)
- Theoretical analysis and modeling
- Molecule-photon/ particle interactions, molecular photonics
- Molecular assemblies: structure, dynamics, thermodynamics, recognition
- Interface, transport, speciation
- Analytical chemistry: health, environment, nuclear energy, archaeology

Section 14

Coordination Chemistry, Interfaces and Processes

- Molecular based materials containing metal, homogeneous catalysis, bioinorganic chemistry
- Physical chemistry and reactivity of surfaces and interfaces
- Nanostructures and nanochemistry
- Heterogeneous catalysis and catalysts
- Electrochemistry, electrocatalysis
- Catalytic processes, corrosion, surface treatment, depollution, energy conversion and energy storage

Section 15

Chemistry of Materials, Nanomaterials and Processes

- Chemistry of condensed matter
- Solid-state chemistry, hybrid and bioinspired materials
- Metallurgical science and engineering

- Metallurgical thermodynamics, processes of elaboration and treatment
- Multiple-scale or hierarchical materials
- Materials for energy

Section 16

Chemistry for living organisms and medicinal chemistry. Design and properties of compounds of biological interest

- Synthesis of molecules and macromolecules of biological interest
- Bio-organic and bio-inorganic chemistry
- Structural chemistry and structural pharmacology
- Optical and magnetic spectroscopies
- Mass spectrometry, diffraction methods, imaging
- Bio-informatics and modeling
- Enzymology, metabolism, proteomics
- Natural products, drugs, chemical probes
- Bio-materials, organized bio-molecular systems, vectorisation

Section 17

Solar System and the distant Universe

- Theoretical and observational cosmology
- Origin and evolution of galaxies and of the large scale structures of the universe
- Physics and chemistry of the interstellar and circumstellar media
- High energy astrophysics, compact objects
- Physics of extremely condensed matter states
- Origin, structure and evolution of stars and planetary systems
- Planetology: origin, dynamics and evolution of the solar system, of solar system objects and their atmosphere
- Solar physics and Sun-Earth relationships
- Spatial and temporal Reference systems
- Astrophysical fluid dynamics
- Instrumentation for ground based and spaceborn observatories

Section 18

Earth and the Terrestrial Planets: structure, history and models

- Composition, structure and dynamic of the core, mantle and crust
- Interaction between coupled geological systems, fluxes and transfers between envelopes
- Formation and evolution of sedimentary basins and mountain chains
- Planetology: origins, composition, structure and dynamic of planetary interiors ; astromaterials ; cosmochemistry
- Time scale in Earth Sciences
- Mechanics of deformation
- Models, experiments and instrumentation in Earth Sciences
- Hazards and risks related to tectonism and volcanism
- Mineral and energy resources and deep reservoirs

Section 19

The Earth System: superficial envelopes

- The climate system: coupling between ocean, atmosphere, land, cryosphere and the biosphere
- Global change: anthropisation and impacts
- Biogeochemical cycles and dynamics of marine ecosystems
- Physics, dynamics, chemistry and biology of oceanic and coastal domains
- Physics dynamics and chemistry of the atmosphere and the cryosphere
- Paleoenvironments: oceanic, glacial and continental archives
- Planetology: physics, dynamics and chemistry of planetary atmospheres
- Geophysical fluid modelling

Section 20

Continental Surfaces and Interfaces

- Processes and evolution of continental, salt marshes and coastal ecosystems
- Soil, water and the continental biosphere: structure, processes, management and protection
- Energy and material fluxes at all scales
- Biodiversity in ecosystem processes
- Functional ecology and community dynamics
- Biogeochemical dynamics: cycle of the elements, chemistry and ecodynamics of pollutants and tracers
- Alteration and erosion of continental surfaces: physical and biogeochemical mechanisms
- Interactions between climate and biosphere
- Impacts of climate change on ecosystems and hydrosystems
- Engineering ecology, environmental protection and management, waste treatment
- Environmental risks and hazards
- Imaging the surface and subsurface

Section 21

Molecular and structural features underlying biological functions

- Three-dimensional structures
- Dynamics and reactivity of the biological macromolecules and their complexes
- Structural genomics
- Proteomics and protein engineering
- Enzymology
- RNAs: Structure/function relationships
- Molecular glycobiology
- Molecular evolution
- Structural approaches to understanding signal transduction, gene expression, regulation and repair
- Bacterial metabolism
- Structural and molecular microbiology

Section 22

Organization, expression and evolution of genomes

- Mechanisms responsible for genome stability and plasticity
- Genome replication, recombination and repair
- Genetic and epigenetic regulation of genome expression (chromatin, coding and noncoding RNAs)
- Global analyses of genomes (genomics, bioinformatics, transcriptomes, proteomes, metabolomes)

- Molecular genetics, physiology and cellular biology of prokaryotic and eukaryotic microorganisms
- Genetics of eukaryotes
- Cytogenetics
- Human genetics

Section 23

Cell biology: organization and functions of the cell; pathogens and host/pathogen relationships

- Eukaryotic cells
- Viruses
- Intracellular bacteria
- Parasites
- Cell cycle
- Apoptosis
- Compartmentation
- Membrane proteins
- Intracellular traffic
- Cytoskeleton
- Membrane bioenergetics
- Cell-cell contact and adhesion mechanisms
- Host-pathogen relationships at the cellular level
- Physical methods to study cells and cellular processes

Section 24

Cellular interactions

- Molecules involved in cell communication and their receptors
- Cell signalling during cellular interactions
- Immune response, neurotransmission, endocrine and metabolic regulations
- Compartmentalization, dynamics and integration of cell signalling
- Changes in the expression profile of genes and their products following cellular interactions
- Abnormalities of cell interactions under pathological conditions

Section 25

Molecular and integrative physiology

- From molecule to function (ascending or descending integrative approaches)
- Nervous systems; endocrine, muscle and cardiovascular systems; epithelial systems, nutrition and metabolism
- Regulation of, and interactions between these functions
- Adaptation of the organism to its environment

Section 26

Development, evolution, reproduction, aging

- Development
- Reproduction
- Aging
- Stem cells
- Embryo
- Cellular aspects of developmental biology
- Biology of organisms

Section 27

Behavior, cognition, brain

- Normal and pathological behavioral and cognitive neurosciences, human and animal models, functional cerebral imagery
- Cognitive psychology, psycholinguistics, social and developmental psychology, neuropsychology, normal and pathological processes
- Ethology: mechanisms and functions
- Psychiatry and psychopathology
- Modeling and cognitive processes and computational neurosciences
- Cognitive ergonomics
- Development, plasticity, learning and memory
- Sensory, perceptive, motor and sensori-motor processes
- Cognitive representations, functions and processes
- Language, reasoning, attention, emotions

Section 28

Integrative Plant Biology

- Terrestrial plants, algae, fungi
- Functional genomics and proteomics
- Intracellular organelles
- Bioenergetics, metabolism
- Membrane transport and signalling
- Integrative plant physiology
- Reproduction and development
- Plant-microorganisms interactions
- Plant virology
- Ecophysiology
- Evolutionary genetics
- Plant biotechnology

Section 29

Biodiversity, evolution and biological adaptations: from macromolecules to communities

- Origin, structure, dynamics and management of biodiversity
- Evolutionary systematics, molecular and morphological phylogenies, biogeography and paleobiology
- Mechanisms and processes of adaptation and evolution: evolution of genomes, evolution of development, genome expression and phenotypic plasticity
- Long-term interaction, hosts-pathogens and hosts-symbionts relations
- Microbial ecology, evolutionary microbiology
- Biology and ecology of populations: structures and demographic dynamics
- Genetics and genomics of populations
- Ecology and communities dynamics
- Evolutionary ecology and biology, ecoethology, ecophysiology, life history traits
- Management of genetic resources and conservation biology

Section 30

Therapy, drugs and bioengineering: concepts and methods

- Pharmacogenomics, pharmacodependence, drug metabolism
- Molecular and cellular pharmacology, integrated pharmacology
- Drug applied biotechnology: vector design, targeting, high throughput screening, cellular and gene therapies

- Immunotherapy
- Bioprocess engineering
- Biomechanics, biomaterials and their cellular compatibility
- Medical imaging: morphology, function, metabolism
- Medical engineering

Section 31

Humans and their Environments: Evolutions, Interactions

- Paleoanthropology
- Biological anthropology
- Prehistory and protohistory
- Paleoenvironments in the Quaternary period
- Biogeography, bioclimatology
- Human ecology
- Dynamics of natural environments and landscapes

Section 32

Ancient and Medieval Worlds

- Archeology, material cultures, artistic productions
- History, languages, texts, images
- The Near and Middle East in the Ancient World, the Graeco-Roman World, the Christian and Muslim civilizations

Section 33

Modern and Contemporary Worlds

- History of the modern and contemporary worlds in all their facets (political, economic, social, cultural)
- History of art (modern and contemporary periods)
- Non-European worlds in their own time-scales: history; written sources and material cultures dealt with in their historical dimension (except for medieval Islam in the mediterranean area)

Section 34

Languages, Language, Discourse

- Theoretical linguistics: phonetics, phonology, morphology, lexicology, syntax, semantics, pragmatics, text and discourse analysis
- Theories of sign and meaning, philosophy of language, semiology
- History of linguistic theories
- History, description and typology of languages, linguistic universals
- Language and society, discursive practices and linguistic interaction, language policy
- Language contact and multilingualism
- Language and cognition
- Logic and formalization
- Natural Language Processing

Section 35

Philosophy, History of Thought, Science of Texts, Theory and History of Literatures and Arts

- Epistemology, history and philosophy of science and technology
- Philosophy of language and cognition

- Philosophy in the Ancient, medieval, modern and contemporary worlds
- Aesthetics and theory of artistic and literary representation
- French and foreign literatures
- Musicology

Section 36

Sociology: Norms and Rules

- Social morphology, societal processes and symbolic forms
- Socialization: behaviours and values
- Individuals, societies and their interactions
- Demography
- The regulation of institutions
- Integration, deviance and criminality
- Juridical science, comparative law
- History, theory, philosophy and sociology of law

Section 37

Economics and Management

- Modeling and formalisation of economic behaviour, economic phenomena and production
- Theory of agents and their decisions; rationality and social determinants; consumer behaviour, marketing
- Rules, norms, regulation and control of organizations and markets
- International Economic exchanges; economics of transition; economics of development; comparative analyses
- Monetary economics, banking and systems of financial intermediation
- Market finances, enterprise finances, risks and insurance
- Geographical areas, territories and networks
- Health economics and management
- Environmental economics and management
- History of economics and of economics facts
- Industrial organizations, sectors and productive systems
- Theory of information, accounting, management control and information systems

Sections 38

Societies and Cultures : Comparative Approaches

- Family structures, social organization and political systems
- Symbolic activity and religious domains
- Acquisition and transmission of knowledge; ethnohistory and ethnolinguistics
- Individual and society, cultural expression of the mind and the self
- Anthropology of art and technology, ethnomusicology
- Biology and society, ethnomedicine
- Historical anthropology: the construction of identity and of the past

Section 39

Areas, Territories and Societies

- Societies and their extensions in space
- Spatial distribution of activities and populations
- Socio-demography of populations
- Towns and cities: sociology and urban history, architecture and town planning
- Town and country planning and the environment

- Areas and territories : structures and dynamics

Section 40

Politics, Power, Organization

- Political science, political sociology, political communication, public action
- Nations, states and societies: political, ideological and religious dimensions
- International relations and strategy
- Comparative politics
- Organization and sociology of production and work; human relations in the workplace
- Sociology and management of organizations and institutions



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