Marie-Claude Arnaud l'Institut mathématiques de Jussieu-Paris

Dynamical systems

Hamiltonian dynamics

weak KAM theory

Fedor Bogomolov
Courant Institute, New York University

Algebraic and symplectic geometry: Kaehler manifolds, holomorphic symplectic varieties, vector bundles, rationality

Arithmetic geometry: rationality points, K3 surfaces, elliptic curves

Representation theory: l-adic representations, invariant theory, equivariant geometry

Martin Bridson
Clay Mathematics Institute
UK

Pure mathematics

Geometry and topology

Geometric group theory

Spaces of non-positive curvature

Pierre Colmez
CNRS, Institut de Mathématiques de Jussieu, Paris

Arithmetic geometry

Galois representations

p-adic Hodge theory

Langlands program

Sylvain Crovisier
Directeur de recherches at the LMO, Université Paris-Sud / Paris-Saclay

Dynamical systems

Differentiable and topological dynamical systems

Qualitative dynamics

Ergodic properties and perturbations of diffeomorphisms and flows.

Freddy Delbaen
ETH Zürich

Mathematical finance

Probability theory

Functional analysis

Mathematical economics

Dmitry Dolgopyat
University of Maryland

Dynamical systems

Probability theory

Statistical physics

Ergodic theory

Ivar Ekeland
Université Paris-Dauphine

Convex analysis, optimization, control theory, calculus of variations

Hamiltonian mechanics, symplectic geometry and topology

Optimal transportation

Hard inverse function theorems

Theory of demand

Adverse selection

Hedonic markets

Urban economics

Growth theory, intergenerational equity, time inconsistency

Portfolio management

Tamas Hausel
Institute of Science and Technology,
Austria

Algebraic and arithmetic geometry of moduli spaces

Geometric representation theory

Geometry of topological quantum field theories

David Kazhdan
Einstein Institute of Mathematics, The Hebrew University of Jerusalem

Representation theory of algebraic groups and arithmetic groups

Kazhdan's T property

Automorphic forms

Kazhdan-Lusztig polynomials

Representations of p-adic Lie groups

Representations of affine Kac-Moody groups and loop groups over local and global fields

Applications of motivic integration to the representation theory of algebraic groups

Anders Lindquist
Zhiyuan Chair Shanghai Jiao Tong University, China

Mathematical systems theory

Control theory

Stochastic realization theory, estimation and control

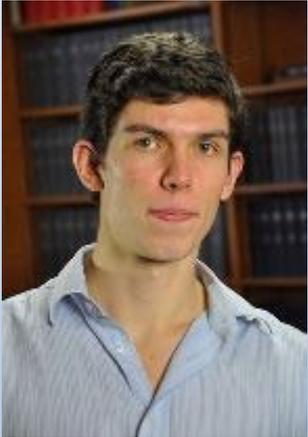Moment problems with complexity constraints

Spectral estimation

Applications of operator theory

Carlangelo Liverani
University of Rome Tor Vergata,
Italy

Dynamical systems

Statistical mechanics

Probability

Quantum mechanics

James Maynard
Mathematical Institute
University of Oxford

Analytic number theory

Sieve methods

Prime numbers

Mathematics

Frank Merle
Université de Cergy-Pontoise/IHES

Nonlinear partial differential equations

Dispersive equations

Mathematical physics

Rahul Pandharipande
Institute for Theoretical Studies, ETH Zürich

Algebraic geometry

Enumerative geometry

Mathematical aspects of string theory

Michael Röckner
Fakultät für Mathematik
Universität Bielefeld

Probability theory

Potential theory

Partial differential equations

Spectral theory

Mathematical physics

Mathematics

Jan Philip Solovej
University of Copenhagen, Denmark

Mathematical physics

Quantum theory

Spectral theory

Partial differential equations

Endre Süli
Mathematical Institute,
University of Oxford

Mathematical and numerical analysis of nonlinear partial differential equations

Finite element methods

Navier-Stokes-Fokker-Planck systems and non-Newtonian fluid flow models

Implicitly constituted material models

Free-discontinuity problems, computational modelling of fracture, and quasi-continuum methods

Adaptive algorithms for partial differential equations and a-posteriori error control

Discontinuous, stabilised, and multiscale finite element methods
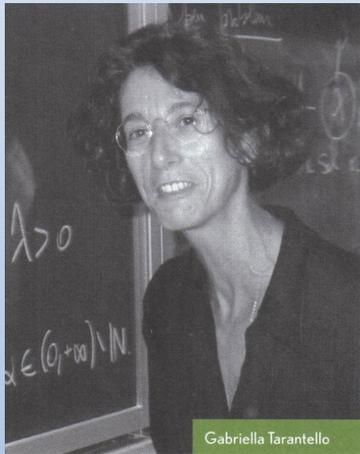
Gabriella Tarantello
Università di Roma `Tor Vergata',
Italy

Nonlinear partial differential equations

Differential geometry

Mathematical physics and Gauge Field Theory

Calculus of variations

Mathematics

Sara van de Geer
**Department of Mathematics,
ETH Zürich**

Mathematical statistics

High-Dimensional statistics

Statistical learning

Mathematics for machine learning

Empirical processes

Karen Vogtmann
University of Warwick
UK

Geometric group theory

Low-dimensional topology

Cohomology of groups

Anastasia Ailamaki
School of Computer and Communication Sciences, EPFL, Switzerland

Database management systems

Data-driven scientific applications

Computer architecture

Storage systems

Mostafa Ammar
School of Computer Science,
Georgia Institute of
Technology,
USA

Computer network architectures and protocols

Mobile cloud computing

Overlay networks

Network virtualization

Video streaming

Mobile wireless networks

Disruption tolerant networks

Michael Bronstein
Imperial College London,
Project CETI, and
Head of Graph Learning
Research, Twitter, UK

Geometric machine learning and deep learning on graphs, manifolds, and point clouds

3D shape analysis using spectral and metric geometric methods

3D depth sensors

Computer graphics

Geometry processing

Computer vision and pattern recognition

Similarity sensitive hashing

Informatics

Jiannong Cao
Hong Kong Polytechnic University

Parallel and distributed Computing

Wireless sensing and networking

Mobile computing

Cloud and edge computing

Big data analytics

Xiaotie Deng
Peking University, China

Algorithmic Game Theory

Computing under unknown/partial information

Parallel computing

Internet economics

Georgios B. Giannakis
University of Minnesota,
Director of College-Wide
Research Center: Digital
Technology Center
USA

Statistical signal processing, machine learning, wireless communications, networking, sensor networks

High-order statistics, (poly)spectra, wavelets, cyclostationary, and non-Gaussian signal analysis

Data science, power systems, network science, Internet-of-Things

Minyi Guo
Shanghai Jiao Tong University,
China

Parallel and distributed computing

Cloud computing

Big data

Parallelizing compilers

Database systems

Abdelsalam (Sumi) Helal
University of Florida, USA

Digital health

Internet of Things

Pervasive computing

Mobile computing

Edge computing

Distributed systems

Marija Ilic
Carnegie Mellon University,
Pittsburgh, PA,
USA

Smart Grids as a means of implementing sustainable IT-enabled electricity services

Modeling and control of future electric energy systems

Modeling and control of economic, policy and technical interactions in dynamic systems under uncertainties

Critical infrastructures and their interdependencie

Computer methods and algorithms for simulating large-scale dynamic systems

Electric power systems modeling

Design of monitoring, control and pricing algorithms for electric power systems

Normal and emergency control of electric power systems

Lydia Kavraki
Ken Kennedy Institute, Rice University,
USA

Robotics

Artificial Intelligence

Computational Biomedicine

Mirella Lapata
University of Washington, USA

Natural language processing

Computational linguistics

Machine learning

Natural language understanding

Natural language generation

Pietro Lio
Department of Computer Science and Technology, University of Cambridge, UK

Computational biology

Bioinformatics

Machine learning

Deep learning

Complex networks

Joël Ouaknine
Max Planck Institute for Software Systems, Saarland. Germany

Foundations of algorithmic verification

Linear dynamical systems (decision, control, and synthesis problems)

Automated verification of real-time, probabilistic, and infinite-state systems

Logic and applications to verification

Automated software analysis

Concurrency

Keshav Pingali
The University of Texas at Austin,
USA

Parallel computing

High-performance computing

Programming languages

Compilers

Runtime systems

Antonio Plaza
University of Extremadura, Spain

Remotely sensed hyperspectral image analysis

Signal and image processing

Efficient implementations of large-scale scientific problems on high performance computing architectures

Commodity Beowulf clusters

Heterogeneous networks of computers and clouds

Field-programmable gate arrays (FPGAs)

Graphical processing units (GPUs)

Informatics

Xiaobo Qu
Chalmers University of Technology,
USA

Machine learning

Automatic control

Emerging transport solutions

Electric vehicles

Public transit planning and optimisation

Connected and automated vehicles

Emergency services

Intelligent Transportation Systems

Informatics

Saket Saurabh
Department of Informatics,
University of Bergen,
Norway

Parameterized algorithms and kernelization

Exact (exponential time) algorithms

Matroid algorithms

Algorithmic graph minors

Treewidth

Approximation algorithms

Maosong Sun
Institute for Artificial Intelligence, Tsinghua University,
China

Natural language processing

Computational linguistics

Artificial intelligence

Machine learning

Knowledge graph

Machine translation

Text generation

Computational education

Informatics

Yan Zhang
Department of Informatics,
University of Oslo,
Norway

Internet of Vehicles

Smart grid

Mobile edge computing

Wireless networks

Internet of Things

Blockchain

5G Beyond/6G

Gabriel Aeppli
Paul Scherrer Institute
Switzerland

Magnetism

Superconductivity

Neutrons

X-rays

Optics

Biosensors

Semiconductors

Physics & Engineering Sciences

Marco Amabili
Department of Mechanical Engineering, McGill University, Montreal, Canada

Vibrations

Nonlinear vibrations

Shell structures

Plates

Higher-order shear and thickness deformation theories

Fluid-structure interaction

Vascular biomechanics

Stability

Guido Caldarelli
University of Venice, Ca' Foscari
Italy

Complex systems

Network theory

Financial networks

Modeling of complex networks

Statistical physics

Massimiliano Di Ventra
University of California, San Diego,
USA

Theoretical condensed matter physics

Quantum transport

Non-equilibrium statistical mechanics

Physics-inspired computing

Speranza Falciano
Istituto Nazionale di Fisica Nucleare (INFN),
Italy

Particle physics

Particle detectors

Trigger and DAQ Systems

Computing

Interdisciplinary physics

Technology transfer

Andrea C. Ferrari
Cambridge Graphene Centre,
University of Cambridge,
UK

Nanotechnology

Nanoscience
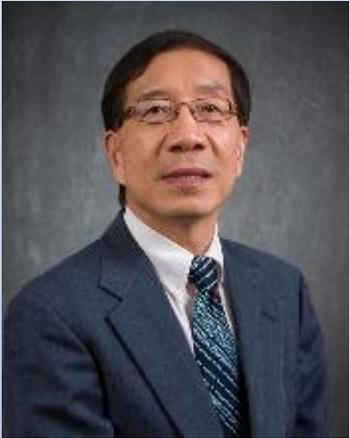
Nanomaterials

Graphene and related materials

Raman spectroscopy

Photonics and optoelectronics

Physics & Engineering Sciences

Ryszard Horodecki
International Centre for Theory of Quantum Technologies
Poland

Quantum entanglement

Quantum information and thermodynamics

Quantum communication

Foundations of quantum physics

Quantum-to-classical transitions

Post-quantum theories of correlations

Relativistic causality

Ying-Cheng Lai
Electrical Engineering,
Arizona State University
USA

Nonlinear dynamics

Quantum chaos

Complex networks

Machine learning

Physics of 2D Dirac materials

Mathematical biology

Systems and synthetic biology

Signal processing

Kim Meow Liew
Civil Engineering, City University of Hong Kong (CityU), Hong Kong

Computational mechanics

Nanostructured materials

Multiscale modeling and simulation

Composite materials and structures

Multifunctional materials

Plate and shell structures

Structural optimization

Fire science

Iñigo J. Losada
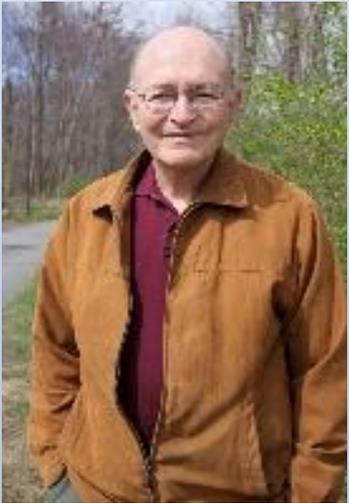**Civil Engineering. University of Cantabria**

Coastal processes (observations and modelling: waves, sea level and currents)

Climate change risk and adaptation in coastal areas

Coastal protection including green and grey solutions

Modelling of wave interaction with natural and man-made coastal features

Ocean renewable energy (wind and waves)

Edward Ott
University of Maryland
USA

Nonlinear dynamics

Chaos

Controlling chaos

Critical behavior at dynamical transition points

Emergent dynamics of large complex systems

Plasma Physics

Application of machine learning to nonlinear dynamics

Krzysztof Pachucki
University of Warsaw, Poland

Theoretical physics

Atomic physics

Quantum electrodynamics

Fundamental physical constants

Ernst Maria Rasel
Leibniz Universität Hannover, Germany

Atomic physics (cold atoms and Bose-Einstein condensation)

Quantum optics (laser cooling)

Quantum sensors and applications

Tests of fundamental physics

Peng Shi
School of Electrical and Electronic Engineering, The University of Adelaide, Australia

Automation and control systems

Artificial intelligence

Information sciences

Autonomous systems

Network systems

Cyber-physical systems

Multi-agent systems

Network security

Hybrid systems

Fuzzy sets and systems

Vladimir Shiltsev
Novosibirsk State University,
Novosibirsk,
Russia

High energy physics

Physics of beams

Accelerator technology

History of physics

Science and society

Didier Sornette
Academy for Advanced Interdisciplinary Studies, Southern University of Science and Technology, Shenzhen, China/ ETH-Zurich

Statistical physics of complex systems

Dragon-kings and extreme risks

Prediction of crises and extreme events

Prediction of social, commercial and marketing success

Hawkes process

Earthquake physics and prediction

Multifractal stress activated model of rupture and earthquakes……….contd

Clivia Marfa Sotomayor Torres
Catalan Institute of Nanoscience and Nanotechnology ICN2, Spain

Physics, solid state, semiconductors

Phonon physics and engineering in low dimensional structures

Nanoscale thermal transport in Si phononic crystals and 2D transition metal dichalcolgenides

Nanofabrication by nanoimprint lithography, electron beam lithography, dry etching and directed self-assembly

Nanophotonics: photonic crystals and quantum dots

Optomechanics.

Dimensional nanometrology.

Ubirajara van Kolck
CNRS/University of Arizona

Effective field theories

Strong interactions

Light nuclei

Many-body problem

Unitary atomic systems

Fundamental symmetries

Vlatko Vedral
Quantum Information Science,
University of Oxford

Quantum physics

Quantum information

Quantum computation

Many-body physics

George Z. Voyiadjis
Louisiana State University
Baton Rouge, Louisiana, USA

Damage mechanics

Impact mechanics

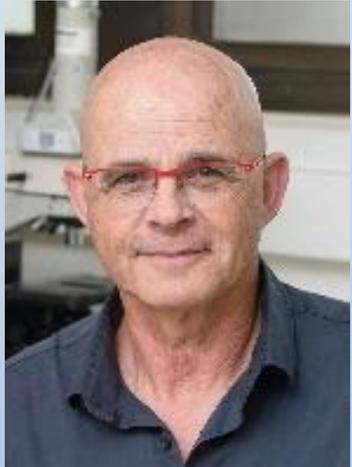Gradient plasticity

Molecular dynamics

Bridging the length scales

Engineering sciences

Solid mechanics

Materials science

Thin films

Experimental mechanics

Hanoch Daniel Wagner
Weizmann Institute of Science
Israel

Micromechanics of advanced composites and their interfaces

Nanotubes , graphene, nanocomposites

Mechanics of natural and bio-inspired structures

Scaling and hierarchical effects in materials

Zidong Wang
Brunel University London, UK

Intelligent data analysis

Control engineering

Signal processing

Cheng-Xiang Wang
Heriot-Watt University,
Edinburgh,
UK

Wireless channel measurements and modelling

B5G wireless communication networks

Applying artificial intelligence to wireless communication networks

Chemical Sciences

Section Chair:

Graham J. Hutchings
Cardiff University, Wales, UK

Academia Europaea 19 88 — THE ACADEMY OF EUROPE

Chemical Sciences

Varinder Aggarwal
Bristol University
UK

Natural product synthesis

Organoboron chemistry

Asymmetric synthesis using sulfoxides

Asymmetric synthesis

Asymmetric catalysis

Ylide reactions

Organosulfur chemistry

Stereoselective synthesis

Vincenzo Barone
Scuola Normale Superiore, Italy

Theoretical chemistry

Spectroscopic properties of complex systems and their reactivity

Integrated tools for physical-chemical processes in gas and condensed phases

Seminal contributions to Density Functional Theory

Astrochemistry

Chemical Sciences

Alberto Bianco
CNRS (DR1), Strasbourg, France

Dendrimer chemistry

Chemistry of complex systems

Drug delivery

Multifunctional nanomaterials

Hydrogels based on self-assembly of hybrid systems

Peptide chemistry

Health impact of nanomaterials

Carbon nanotubes, graphene, adamantane and other 2D materials

Organic functionalization of nanomaterials

Imaging

Chemical Sciences

Valerii Bukhtiyarov
Boreskov Institute of Catalysis (BIC), Novosibirsk, Russia

Heterogeneous catalysts

Homogeneous catalysts

Functional nanomaterials

Physical methods for surface study

X-ray photoelectron spectroscopy

Synchrotron radiation study

Neil Champness
University of Birmingham
UK

Surface self-assembly

Crystal engineering

Supramolecular chemistry

Metal-organic frameworks

Self-assembly

Lifeng Chi
Institute of Functional Nano &
Soft Materials (FUNSOM),
Soochow University,
China

On-Surface chemical reactions

Molecular self-assembly on surfaces

Interfacial molecular
patterning/engineering

Scanning probe microscopy

Katarzyna Chojnacka
Wrocław University of Science and Technology Poland

Bio-regulators

Valorization of wastes to fertilizers

Biological methods of wastewater treatment
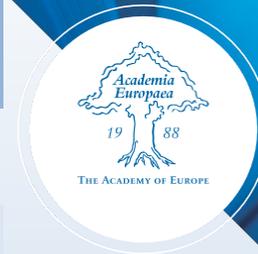
Biosorption

Bio-fertilizers

Analytical Methods

Biostimulants of plant growth

ISO 17025

Development of value-added products from algae

Biomonitoring

Chemical Sciences

Rodolphe Clérac
Centre de Recherche Paul Pascal
France

Coordination Chemistry

Molecule-based Materials

Solid state properties

Phase transitions

Molecular Magnetism

Molecular Chemistry

Chemical Sciences

Zheng-Xiao Guo
HKU Zhejiang Institute of Research and Innovation
Hong Kong

Functional and quantum nanostructures

Multiscale materials and process simulations

Electrochemical catalysis

Photoelectrochemical catalysis

Carbon capture and utilisation

Hydrogen and fuel cells

Batteries and supercapacitors

Sensors and biosensors

Stefan Hecht
Leibniz Institute for Interactive Materials, Aachen, Germany

Molecular nanoscience and materials chemistry

Macromolecular and supramolecular chemistry, organic synthesis

Photochemistry, electrochemistry, spectroelectrochemistry

Physical (organic) chemistry, surface science

Photochromism (light-controlled and light-driven processes, materials and devices)

Reactions in confinement, in particular on-surface polymerizations

Xile Hu
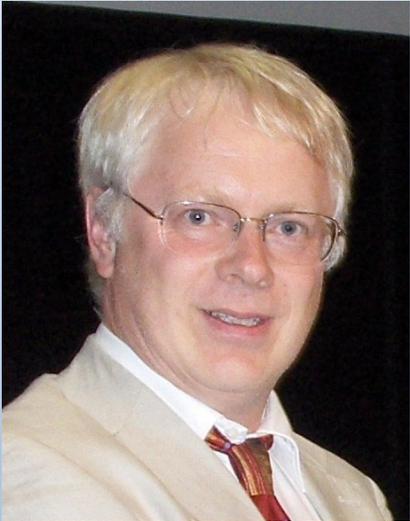**École Polytechnique Fédérale de Lausanne, Switzerland**

Organometallic chemistry

Inorganic materials

Bioinorganic chemistry

Electrocatalysis

Homogeneous catalysis

John Irvine
University of St Andrews, UK

Energy materials

Solid state chemistry

Electrochemistry

Materials chemistry

Fuel cells

Batteries

Nanomaterials

Materials science

Oxides

Chemical Sciences

Jaak Järv
University of Tartu, Estonia

Physical organic chemistry

Computational chemistry and biochemistry

Kinetic mechanisms of neurotransmitter receptors and transporters

Quantitative structure-activity relationships

Design and synthesis of bio-mimetic molecules

Enzyme kinetics and mechanism

Organic chemistry

Physical biochemistry and bio-kinetics

Quantitative aspects of bio-specificity

Chemical Sciences

Peter Kralchevsky
Sofia University, Bulgaria

Capillarity, contact angles, thin liquid films, surface forces

Colloidal Dispersions: foams, emulsions, suspensions

Particles at fluid interfaces and capillary forces

General curved interfaces, bending moments, biointerfaces

Colloid and interface science

Micelles, micelle growth, rheology, solubilization

Surfactant adsorption: thermodynamics, kinetics and detergency

Chemical Sciences

Sebastien Lecommandoux
Ecole Nationale Supérieure de Chimie, de Biologie & de Physique,
France

Therapeutic Nanotechnologies, Drug-Delivery, Biomaterials

Self-Assembly and SupraMacromolecular chemistry

Stimuli-responsive vesicles and polymersomes

Polypeptide, polysaccharide and protein-based synthesis and self-assembly

Biomimicry for (bio)materials design

Design of protocells, cascade reactions

Chemical Sciences

Stephen Mann
Max Planck-Bristol Centre for Minimal Biology, University of Bristol, UK

Protocell design and construction

Bio-inspired materials chemistry

Chemical investigations of biomineralization

Development of self-assembly approaches to hybrid nanoscale objects

Iain McCulloch
King Abdullah University of Science and Technology

Polymer chemistry

Organic electronics

Semiconducting polymers

Solar energy

Functional materials

Antonios Mikos
National Institutes of Health
Center for Engineering
Complex Tissues,
Rice University,
USA

Biomaterials science

Bionanotechnology and nanomaterials

Controlled drug and gene delivery

3D Printing and Bioprinting

Tissue engineering and regenerative medicine

Sylviane Muller
Institute for drug development and discovery (IMS), Strasbourg, France

Proteins: post-translational modifications, misfolding

Organic synthesis and immunology

Peptides: chemistry, immunochemistry

Immunopathology: autoimmunity, peptide-based synthetic vaccines

Nanomedicine: nanovectors, biodelivery, safety

Cellular immunology: mechanisms of the death /survival balance (apoptosis, autophagy), lymphocytes (signaling)

Therapeutic immunology and chemistry: development of molecules that target pathological pathways, peptide drug candidates

Clinical trials: animal models, human

Valeria Nicolosi
Trinity College Dublin, Ireland

Nanomaterials

2D Materials

Energy storage

Batteries

Supercapacitors

Electron microscopy

Virgil Percec
University of Pennsylvania,
Philadelphia,
USA

Organic chemistry

Supramolecular chemistry

Polymer chemistry

Dendrimers

Cross coupling reactions

Catalysis

Biological membrane mimics

Frank-Kasper phases

Chiral phases

Martin Quack
ETH Zurich

Physical chemistry

High resolution molecular spectroscopy

Molecular kinetics

Laser chemistry

Symmetries in physics and chemistry

Molecular chirality

Parity violation

Beatriz Roldán Cuenya
Fritz Haber Institute of the Max Planck Society, Berlin, Germany
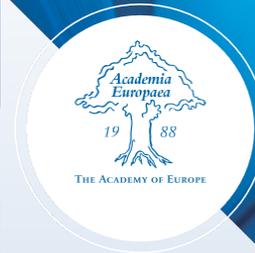
Surface science

Physical chemistry

Electrochemistry

Thermal catalysis

Nanostructure synthesis

Nanoparticles for catalytic applications

In situ and operando microscopy and spectroscopy for catalysis applications

Chemical Sciences

Eliseo Ruiz
Universidad de Barcelona
Espana

Theoretical methods applied to the magnetic properties of inorganic molecular systems

Theoretical aspects of spin-crossover, exchange interactions and magnetic anisotropy in single-molecule magnets

Density Functional Theory (DFT) and ab initio calculations

Molecular Electronics and Spintronics: room temperature magnetoresistance in single-molecule devices with magnetic molecules.

Synthesis, characterization and study of mononuclear magnetic complexes, bidimensional frameworks, supramolecular systems

Conception and managing of computers' facilities at the university level

Chemical Sciences
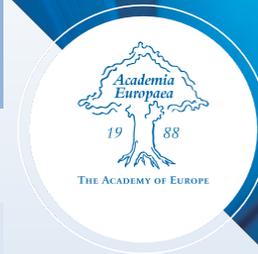
Jeremy Sanders
University of Cambridge, UK

Supramolecular chemistry

Dynamic combinatorial chemistry

NMR spectroscopy in chemistry and biology

Metalloporphyrin chemistry

Mechanochemistry

Chemical Sciences

Nico Sommerdijk
Radboud UMC Nijmegen,
The Netherlands

Biomineralization

Advanced electron microscopy

Biomimetic Materials

Bioinspired Materials

Crystallization

Selfassembly

Osamu Terasaki
ShanghaiTech University, China

Electron dynamical scattering

Incommensurate alloy structures

Novel cluster crystals synthesized in the regular pores of zeolites

Fine structure of zeolites by Electron Microscopy

First structure solution of a complex zeolite by electron crystallography

New methods for structure determination of mesoporous crystals by Electron Microscopy

Accurate structure determination of Metal-Organic Frameworks and Covalent-Organic Frameworks by Electron Microscopy

Electron crystallography for determining the handedness of chiral zeolite nano-crystals

First direct observation of all framework atoms in zeolites by Electron Microscopy

Jiaguo Yu
Wuhan University of Technology,
P.R. China

Semiconductor photocatalysis

Photocatalytic hydrogen production

Photocatalytic CO2 reduction for solar fuel production

Dye-sensitized and perovskite solar cells

Supercapacitor

Electrocatalysis

Formaldehyde room-temperature oxidation decomposition

Adsorption and adsorption materials

Jiaguo Yu
Tongji University, China

Heterothiometallic cluster compounds

Transition-metal chalcogenide supermolecules and assemblies

Metal Sulfide/Iodate/Borate crystalline materials

Photochemistry and photophysics

Second-/third-order nonlinear optical materials

Covalently functionalized porphyrin-carbon nanotube/graphene nanohybrids

Nano Heterojunctions in highly efficient hydrogen generation by photoelectrolysis

Chromophoric and luminescent clusters, aggregates and nano-assemblies

Earth & Cosmic Sciences

Section Chair:

Paolo Papale
Istituto Nazionale di Geofisica e Vulcanologia
Pisa

Philippe Agard
Sorbonne Université
Paris
France

Metamorphic petrology

Subduction dynamics

Plate interface

Obduction

High-pressure and low-temperature metamorphism

Geochemistry of metamorphic rocks

Alps

Oman

Zagros

David Andrew Barry
Ecole polytechnique fédérale de Lausanne
Switzerland

Subsurface and near-surface hydrology

Water quality

Contaminant transport and remediation of soil and groundwater

Models of hydrological and vadose zone processes

Unsaturated flow theory

Soil erosion

Lake hydrodynamics

Aquifer-coastal ocean interactions

Qiuming Cheng
State Key Lab. of Geological Processes and Mineral Resources (China University of Geosciences)
China

Mineral resource potential assessment

Mineral prospecting and exploration

Fractal dynamic modeling of extreme geological events

Geoinformatics and GIS data integration

Fractal and singularity analysis of nonlinear geological processes

Spatial analysis and machine learning

Mathematical Geosciences

Nonlinear processes in geosciences

Roger Davies
Oxford Hintze Centre for Astrophysical Surveys, University of Oxford
UK

Galaxy Evolution: stellar populations

Astronomical instrumentation: large telescopes

Cosmology: the distance scale

Astronomical instrumentation: integral field spectrographs

Galaxy Evolution: dynamics

Cosmology: large scale motions of galaxies

Galaxy Evolution: early type galaxies

Hugo Delgado-Granados
Institute of Geophysics, UNAM
Mexico

Volcanology

Quaternary geology

Periglaciology

Volcano-ice interactions

Volcano monitoring

Glaciology

Volcanic hazards

Geochemistry

Natural hazards

Peng Gong
University of Hong Kong

Remote sensing

Global environmental change studies

Environmentally-related infectious disease modeling

Public health

Frank Hawthorne
University of Manitoba
Canada

Applications of graph theory and combinatorial topology to crystallography and the solid state

Control of chemical reactions in minerals by bond topology

Connection of thermodynamic properties of minerals by bond topology and crystal-structure connectivity

Crystal chemistry of complex minerals (amphiboles, staurolite, tourmaline, sapphirine, kornerupine)

Short-Range Order/Disorder in Rock-forming Minerals through a multitechnique approach

Structural classification of minerals and the effect of bonding topology on properties and behaviour

Crystallization of salt minerals in natural saline lakes and synthetic aqueous brines

Lex Kaper
University of Amsterdam
The Netherlands

Physics, formation and evolution of massive stars

Studies of massive X-ray binaries

Physics of Gamma-Ray Bursts and Gravitational Wave sources

Instrument development for large telescopes, ground-based and in space

Ingrid Kögel-Knabner
Technical University of Munich
Germany

Soil processes

Soil management

Land use

Global carbon cycle

Soil organic matter

Junguo Liu
Southern University of Science and Technology (SUSTech), Shenzhen,
China

Ecological restoration, green infrastructure, and nature-based solutions

Climate change mitigation, carbon emission, and environmental management

Water resources, water policy, water-energy-food nexus, and virtual water trade

Cesar Ranero
Instituto de Ciencias del Mar, Barcelona, Spain

Tectonics

Earthquakes

Subduction zones

Rifted margins

Mid Ocean ridges

Seismic methods

Jaap Damsté Sinninghe
NIOZ Royal Netherlands Institute for Sea Research/ University of Utrecht,
The Netherlands

Organic geochemistry

Biomarker proxy development and application

Paleoclimatology

Paleoceanography

Microbiology

Lipids

Environmental analytical chemistry

Oceanography

Biogeosciences

Paul Tackley
ETH-Zürich,
Switzerland

High performance parallel supercomputers

Structure, dynamics and evolution of Earth and other terrestrial planets

Mantle convection, lithospheric dynamics and plate tectonics

Development of methods for numerical simulation of planetary processes

Lithosphere dynamics, mantle dynamics, planetary dynamics, planetary differentiation and extra-solar planets

Earth & Cosmic Sciences

Thomas Tauris
Aarhus University
Denmark

Gravitational wave sources

Population synthesis

Binary and millisecond radio pulsars

Stellar evolution in binaries

Formation and evolution of binaries containing compact objects

Physics of compact objects: neutron stars, black holes and white dwarfs

X-ray binaries

Supernovae

Susan Trumbore
**Max Planck Institute for Biogeochemistry
Jena, Germany**

Application of radiocarbon to study the dynamics of carbon cycling in plants and soils

Friedhelm von Blanckenburg

GFZ Potsdam and FU Berlin
Germany

Application of metal stable isotopes in the Earth-, Plant Nutrition, and Biomedical Sciences

Mass Spectrometry

Earth surface processes

Developing cosmogenic nuclide methods in Earth surface and paleo-climate research

Femtosecond laser ablation

Earth & Cosmic Sciences

Roberto Rodriguez-Roisin
Weizmann Institute of Science, Israel.

Atmospheric chemistry and microphysics of aerosols

Aerosol-climate interactions and their global climatic effects

Heterogeneous atmospheric chemistry

Satellite observations of atmospheric and climatic processes

Optical properties of aerosols

Ice nucleation

Bioaerosols

Health and climatic effects of pollution and bio-aerosols

Global and regional aspects of air pollution

Aldo Zollo
University "Federico II" of Naples
Italy

High-resolution imaging of volcanic interiors

Theoretical and experimental seismology

Earthquake Early Warning