

**Academy of Finland**  
**Winter 2024 call**  
**panel structure draft**

# Panel structure guidelines

- The panel structure does not represent any scientific classification as such.
- The panels are presented in alphabetical order: the numbering, names or descriptors do not reflect any priorities.
- Any topic is welcome, regardless of whether it is explicitly stated. The lists of keywords are not exhaustive.
- Applicants must choose one panel and one research council in their application. None of the panels are linked to any particular research council as such.
- Applicants are encouraged to investigate several panel descriptions in their field and to carefully read both the scope and keywords before submitting the application.
- Applicants submit their application to the most relevant panel. Applications may be reallocated only when selection is clearly wrong, and applicants will be informed in such cases.
- The panel structure is revised regularly (for scientific and/or operational reasons).

# Panel structure DRAFT

RC24_01 <u>Arts and literature research</u>	RC24_02 <u>Atmospheric sciences</u>	RC24_03 <u>Automation and construction engineering</u>	RC24_04 <u>Biochemistry, biophysics, and cell and molecular biology</u>	RC24_05 <u>Bioinformatics and systems biology</u>	RC24_06 <u>Biomaterials, biotechnology, developmental biology, drugs and stem cell technologies</u>	RC24_07 <u>Biomedical engineering</u>
RC24_08 <u>Cancer and immunology</u>	RC24_09 <u>Chemistry</u>	RC24_10 <u>Clinical medicine</u>	RC24_11 <u>Clinical Researcher funding</u>	RC24_12 <u>Computer science</u>	RC24_13 <u>Data science, computational science and statistics</u>	RC24_14 <u>Earth sciences and the environment</u>
RC24_15 <u>Ecology and evolutionary biology</u>	RC24_16 <u>Economics and business</u>	RC24_17 <u>Education</u>	RC24_18 <u>Energy engineering</u>	RC24_19 <u>Environmental science</u>	RC24_20 <u>Environmental social science and human geography</u>	RC24_21 <u>Fundamentals of matter and light</u>
RC24_22 <u>Health, welfare and society</u>	RC24_23 <u>History and archaeology</u>	RC24_24 <u>Human factors and technology design</u>	RC24_25 <u>Law, rights and regulations</u>	RC24_26 <u>Lifestyle, life course and health</u>	RC24_27 <u>Linguistics</u>	RC24_28 <u>Materials engineering</u>
RC24_29 <u>Materials physics and applied optics</u>	RC24_30 <u>Mathematics</u>	RC24_31 <u>Neuroscience</u>	RC24_32 <u>One Health</u>	RC24_33 <u>Philosophy &amp; theology and the study of religions</u>	RC24_34 <u>Physical activity and sport science</u>	RC24_35 <u>Plant and forest science</u>
RC24_36 <u>Politics, communication and gender</u>	RC24_37 <u>Process engineering</u>	RC24_38 <u>Psychology and education</u>	RC24_39 <u>Sociology, anthropology and social work</u>	RC24_40 <u>Telecommunications &amp; electronics</u>	RC24_41 <u>Universe sciences and particle physics</u>	

## Arts and literature research

### Scope

The panel reviews applications in all areas of literature, music and art research, as well as multidisciplinary applications that contribute primarily to these research fields. Multidisciplinary research can focus on, for example, the relations of art/music/literature and society, culture, wellbeing or the environment.

### Keywords

aesthetics; art history; art education; artistic research; musicology; music psychology; sociology of music; music history, performance studies; theatre; film; audiovisual arts; comparative literature; literary history; literary and cultural studies; literary criticism; gender and literature

# RC24\_02

## Atmospheric sciences

### Scope

The panel covers research in atmospheric sciences.

### Keywords

atmospheric chemistry; atmospheric composition; atmospheric aerosol research; air pollution; atmospheric remote sensing; climatology and climate change; climate modelling; meteorology; atmospheric physics and dynamics; ozone; upper atmosphere; ionosphere

## Automation and construction engineering

### Scope

The panel includes all kinds of mobile machines, navigation, construction and automation. See also the panel Materials engineering.

### Keywords

control; robotics; vehicles; marine technology; situational awareness; construction production and management; transport; maintenance of buildings and infrastructures

# Biochemistry, biophysics and cell and molecular biology

## Scope

The panel includes research on biological structures, functions and mechanisms at molecular and cellular levels.

## Keywords

biochemistry; biophysics; cell and molecular biology; cell signalling; cellular organelles; chromatin; genome editing; gene transfer; mechanobiology; microbiology; mitochondria; molecular dynamics; molecular mechanics; molecular modelling; ribosomes; structural biology; transcription; translational machinery; viral vectors; virology

# RC24\_05

## Bioinformatics and systems biology

### Scope

The scope of this panel covers data science in biology and medicine, including related computational and mathematical modelling, as well as validation of data in biological systems.

### Keywords

bioinformatics; biostatistics; genetic epidemiology; genomics and other large scale 'omics' studies; integrative biology for personalised medicine and public health; pharmacogenetics; preventative and prognostic medicine



# Biomaterials, biotechnology, developmental biology, drugs and stem cell technologies

## Scope

The panel includes basic and applied research on biomaterials, biotechnology, developmental biology, drug delivery and drug targeting, stem cell and organoid technologies, and tissue engineering.

## Keywords

biomaterials; biotechnology; developmental biology; drug carriers; drug delivery; drug targeting; embryogenesis; extracellular vesicles; microfluidics; nanoparticles; organogenesis; organoids; organ-on-chip; pharmaceutical biotechnology; stem cells; tissue differentiation; tissue engineering; tissue models, tissue regeneration; toxicology; vaccine delivery

# RC24\_07

## Biomedical engineering

### Scope

This panel covers engineering research with a focus on the development of engineering principles and methods for biomedical research, for example methods to study, diagnose or treat medical conditions.

### Keywords

biomedical imaging technologies, including neuroimaging methods and biomedical optics; physiological measurement technology; processing of biomedical images and signals; biomedical modelling and simulation

## Cancer and immunology

### Scope

The panel includes nonclinical basic and translational research on cancer and immunology in humans.

### Keywords

adaptive immunity; autoimmune diseases (research on molecular/cellular level); autoimmunity; cancer stem cells; haemato-oncology, (cancer) imaging; immunotherapy; infection; inflammation; innate immunity; metastasis and interaction with the microenvironment; molecular and cellular cancer research; molecular and cellular immunology; tumour angiogenesis; tumour immunology

# RC24\_09

## Chemistry

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### Scope

The panel covers research in different areas of chemistry. Please also see related panels, for example Process engineering, Materials physics and applied optics, Biomaterials, biotechnology, developmental biology, drugs and stem cell technologies, and Biochemistry, biophysics and cell and molecular biology

### Keywords

analytical chemistry; biological chemistry; colloid chemistry; computational chemistry; coordination chemistry; electrochemistry; theoretical chemistry; materials chemistry; inorganic chemistry; medicinal chemistry; organic chemistry; organometallic chemistry; physical chemistry; polymer chemistry; radiochemistry; solid state chemistry; supramolecular chemistry; surface chemistry

# RC24\_10

## Clinical medicine

### Scope

The panel includes all fields of clinical research.

### Keywords

clinical cancer research; clinical cardiology; clinical endocrinology; clinical immunology; clinical medicine; clinical neurology; obstetrics and gynaecology; odontology; orthopaedics; paediatrics; psychiatry; surgery; veterinary medicine

# RC24\_11

## Clinical Researcher funding

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### Scope

The panel includes the applications for Clinical Researcher funding.

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## Computer science

### Scope

This is the main panel for applications in computer science. The scope is wide and covers all layers of technical complexity, programming and software engineering approaches. Please note that there are other panels for the studies of hardware layer components, communications engineering, human-computer interaction and information systems sciences.

### Keywords

computer science; software engineering; computer graphics; formal methods; algorithms; programming; security & privacy; parallel and distributed computing; software architectures; embedded systems; operating systems; database systems; knowledge representation; natural language processing; speech recognition; computer vision and machine learning algorithms

# RC24\_13

## Data science, computational science and statistics

### Scope

This panel covers research in data science, statistics and computational science, including topics in numerical analysis. Please note that there is a computer science review panel that covers the topics related to artificial intelligence research and development of algorithms (e.g. machine learning) and software. There is also a specific panel for bioinformatics and related data analysis and modelling.

### Keywords

data science (e.g. predictive analytics); statistics; statistical inference; computational science; numerical analysis



# RC24\_14

## Earth sciences and environment

### Scope

This panel covers research in natural sciences and engineering contributing to the areas listed in the keywords. Please also see the related panels, for example Atmospheric sciences, Plant and forest science, and Environmental science.

### Keywords

geology; mineralogy and petrology; palaeoclimatology; palaeontology; quaternary geology; sedimentology; tectonics; environmental geology; hydrology; water resources management/engineering; oceanography; glaciology and snow research; geochemistry; geophysics; physical geography; remote sensing and Earth observation from space; environmental monitoring and informatics; geoinformatics; geodesy

# RC24\_15

## Ecology and evolutionary biology

### Scope

The scope of this panel includes ecology, evolutionary biology and ecophysiology, of mainly animals.

### Keywords

animal behaviour; behavioural ecology; community ecology; ecology; ecophysiology; evolutionary biology; evolutionary ecology; evolutionary genomics; host-parasite interactions; microbial evolution; molecular evolution; population ecology; phylogenetics and systematics; theoretical ecology

# Economics and business

## Scope

The panel reviews applications in all fields of economics and finance, and in business research including management science, industrial management, organisation studies, accounting, marketing and entrepreneurship. Business-focused applications in organisational communication, organisation psychology and operations research and multidisciplinary applications in innovation studies, area/industrial development and working life also fit the scope of the panel.

- Applications in business law are reviewed in the panel Law, rights and regulations (RC24\_25)
- Applications in external organisational communication are reviewed in the panel Politics, communication and gender (RC24\_36)
- Applications in information systems science, management information systems and other technology-focused applications should also see the panel Human factors and technology design (RC24\_24)
- Applications in work and organisation psychology should also see the panel Psychology and education (RC24\_38)

## Keywords

business administration; business economics; business studies; macroeconomics; econometrics; public economics; labour economics; behavioural economics; health economics; economics of education; taxation; welfare economics; international economics; international trade; environmental economics; sustainability issues in economics; marketing; consumer behaviour; accounting; management accounting; corporate social responsibility (CSR); finance management; industrial management; organisation studies; international business; entrepreneurship; innovations; logistics; supply chain management

# RC24\_17

## Education

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### Scope

This panel concerns applications in **education**. **The panel focuses on education as a societal, cultural and system-level phenomenon.** Although the main focus of research is within the field of education, the research is typically interdisciplinary, linking especially to political sciences, administrative sciences, sociology and other social sciences, philosophy, and social environmental research, among others.

The applicant should also assess whether their application is suitable for this panel or the panel RC24\_38 (Psychology and education).

### Keywords

education science; adult education science; vocational education research; education evaluation research; general education; education policy; study paths and education transitions; education systems; education evaluation; comparative (international) education research; philosophy of education; sociology of education; education and equality; participation in education; democracy and education; learning environments (physical/digital); expertise; work in academia; vocational education; academic education; lifelong learning; environmental and sustainable development within education; social and professional role of teachers; literacy (e.g. digital, media, AI literacy)

# RC24\_18

## Energy engineering

### Scope

The panel approaches different ways of energy production, distribution and storage.

### Keywords

electric power and energy systems; electrical motors; energy conversion processes; IC engines; combustion technology; thermodynamics; energy distribution and storage

# RC24\_19

## Environmental science

### Scope

This panel includes elemental cycles and energy flows in all habitats.

### Keywords

aquatic science; biogeochemical cycles (aquatic, terrestrial, atmospheric); dendrochronology; environmental microbiology; environmental science; geosciences (with biological links/elements); palaeoecology; peatlands; soil science

# Environmental social science and human geography

## Scope

The panel reviews applications in environmental social sciences, human geography (incl. economic geography, regional development, tourism research, social and cultural geography, urban studies and regional studies), architecture (incl. community planning) and development studies, as well as multidisciplinary studies contributing primarily to these research fields.

## Keywords

environment and development; environmental anthropology; environmental politics and policy; environmental sociology; food systems; human mobility; human–nature interactions; land use; multi-species studies; political ecology; sustainability transitions

# Fundamentals of matter and light

## Scope

This panel covers research on the fundamental properties of matter and light, as well as research on quantum physics and applied physics related to quantum information science. It includes research from the study of single atoms to studies of the properties of solid state, as well as research on the interaction between condensed matter and radiation. The theoretical methods include analytical, numerical as well as statistical approaches. Please also see related panels, for example Materials physics and applied optics.

## Keywords

atomic and molecular physics; condensed-matter physics; quantum materials; nanophysics; spintronics; magnetism; quantum physics and solid-state quantum technologies; quantum optics and fundamental aspects of optics and photonics; condensed matter–beam interactions (photons, electrons, etc.); fusion plasma physics



# RC24\_22

## Health, welfare and society

### Scope

The panel includes topics related to health, welfare and society. The influence of social factors on human health and its implications for human welfare.

### Keywords

ageing and wellbeing; demography; digitalisation in health and social services; eHealth and welfare; family, fertility and society; healthcare systems; health economics and management; health policy and society; health service resources; health sociology; healthcare ethics; mental health and society; nursing science; occupational health; public health and society; substance abuse

# RC24\_23

## History and archaeology

### Scope

The panel reviews applications in the fields of history and archaeology. Applications can focus on national or international topics, analyse themes from prehistory to the contemporary period, and examine theoretical or methodological questions. The panel also welcomes multidisciplinary applications contributing mainly to research on history and/or archaeology.

### Keywords

- cultural history; economic history; environmental history; history of science and technology; history theory and methodology; intellectual history; military history; political history; social history, etc.
- bioarchaeology; prehistoric archaeology; classical archaeology; medieval archaeology; urban and industrial archaeology; maritime archaeology, etc.

## Human factors and technology design

### Scope

This is a multidisciplinary review panel for applications related to a broadly understood theme of human-technology interaction. The scope of the panel is wide and interdisciplinary, combining human agency and technology in various domains.

### Keywords

human-computer interaction; information systems science; data management systems, information retrieval; design research; psychology & emotions; education & learning; health & care; economy & innovation; AI & society, explainable AI; virtual, augmented & extended reality; games & gamification; business administration, information management and systems

# RC24\_25

## Law, rights and regulations

### Scope

The panel reviews applications in all fields of law and legal studies, including socio-legal studies and criminology, interdisciplinary applications with a significant legal component, and applications in other fields (in particular: environmental social science research, business research, gender studies and other social sciences) with a strong focus on rights and regulations.

### Keywords

law; legal studies; legal theory; legal philosophy; jurisprudence; legal history; law and economics; socio-legal studies; criminology; contractual frameworks and theory; regulations; regulatory theory; human rights; minority rights; environmental rights

# RC24\_26

## Lifestyle, life course and health

### Scope

The panel includes research on lifestyle, life course, public health and metabolic health.

### Keywords

adipose tissue and health; cardiovascular health; cognition and health; disease prevention; epidemiology; health behaviour; health intervention; human gut microbiota; life course; lifestyle; mental health; medical statistics; metabolic health; nutritional science; obesity; physiology; public health; type 2 diabetes

# RC24\_27

## Linguistics

### Scope

This panel reviews applications within linguistics, including applied and theoretical linguistics, phonetics, individual languages and language groups, and the study of language, culture and society. It also reviews psycholinguistics and neurolinguistics applications with a strong focus on linguistics research.

- Applicants in psycholinguistics and neurolinguistics need to consider whether their main contribution is to linguistic research or whether they should choose the panel RC24\_38 (Psychology and education).
- Applicants working on language didactics/pedagogy or language learning evaluation should also see the panel RC24\_17 (Education).
- Applicants dealing with human-machine interaction or information systems should also consider the panel RC24\_24 (Human factors and technology design).
- Applicants working on communication methods and channels, media, datafication and digitalisation should also see the panel RC24\_36 (Politics, communication and gender).

### Keywords

applied linguistics; computational linguistics and language technology; historical linguistics; language variation; sociolinguistics; translation and interpreting studies; linguistic anthropology; language acquisition and learning; neurolinguistics; psycholinguistics; corpus linguistics; morphology and syntax; phonetics and phonology; semantics and pragmatics; typology; genealogy; discourse analysis, interaction analysis; conversation analysis; multimodal analysis.

# RC24\_28

## Materials engineering

### Scope

The panel approaches properties, shaping and joining of materials from a mechanical and/or civil engineering viewpoint. See also Automation and construction engineering.

### Keywords

metals, ceramics, wood, plastics, composites, coatings, etc. in engineering applications; fracture mechanics; construction mechanics; tribology; additive manufacturing; welding

# RC24\_29

## Materials physics and applied optics

### Scope

The panel focuses on physical properties of materials, including applied aspects of light-matter interaction. This encompasses research on the development and characterisation of materials such as semiconductors, thin films, organic electronics, as well as research on soft-matter physics. The panel also covers research on the design and fabrication of photonic and optoelectronic materials, including applications in photovoltaics, photodetectors, optical sensing, and imaging. Theoretical, experimental and computational approaches are all relevant to the panel. Please also see related panels, for example Fundamentals of matter and light.

### Keywords

materials physics; functional materials; semiconductors; surface physics; thin films; organic electronics; photovoltaics and photodetectors; photonics materials (incl. optical metamaterials); optoelectronics and optoelectronic components; optical sensing and imaging; laser physics; soft-matter physics



# RC24\_30

## Mathematics

### Scope

The panel covers research in mathematics, principally concerning the subjects listed in the keywords. Please also see the panel Data science, computational science and statistics and the panel Computer science, for instance.

### Keywords

complex analysis; harmonic analysis; partial differential equations; functional analysis; operator theory; geometric measure theory; calculus of variations; fractals; geometry; inverse problems; mathematical physics; dynamic systems theory; control theory; algebra; combinatorics; number theory; logic; coding theory; graph theory; group theory; probability theory; optimisation

# RC24\_31

## Neuroscience

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### Scope

The panel includes nonclinical research related to neurological and neurodegenerative disorders and nervous system injuries, molecular and cellular research of the nervous system, neural networks and plasticity, neural basis of cognition.

### Keywords

nervous system injuries; neural basis of cognition; neural circuits; neural plasticity; neurogenetics; neuroimaging; neurological and neurodegenerative disorders; neuronal and glial cells

# RC24\_32

## One Health

### Scope

The panel includes research on One Health aspects for the health of people, animals and the environment.

- Applicants working on food systems should also see the panel RC24\_20 (Environmental social science and human geography).

### Keywords

antimicrobial resistance including phage therapy; ecotoxicology; environmental pollution and health; food and nutrition; food safety and security; food sciences; indoor air quality and health; infections; microbial/viral/parasitic zoonoses; veterinary science; wash (water, sanitation, health and hygiene)

# Philosophy & theology and the study of religions

## Scope

This is a panel for applications from all research areas in philosophy, theology and the study of religions. The proposed research questions and approaches can be historical, theoretical, practical, applied or interdisciplinary, and connect to various philosophical, theological or religious traditions. The panel also welcomes multidisciplinary applications that contribute to philosophical or theological research or the study of religions.

## Keywords

ethics; epistemology; history of philosophy; logic; ontology and metaphysics; philosophy of language; philosophy of mind; philosophy of science; social and political philosophy; exegetics; church history; practical theology; systematic theology; study of religions

# RC24\_34

## Physical activity and sport science

### Scope

The panel includes research on physical activity and sport science. The applications for 'Funding for sport science research projects' are reviewed in this panel.

### Keywords

biomechanics; exercise biology; musculoskeletal system; physical activity; sedentary behaviour; sport science

# Plant and forest science

## Scope

The scope of this panel includes both basic and applied research on plants at different levels of biological complexity from molecules through to ecosystems. The following keywords in the context of plant and forest research are covered.

## Keywords

biochemistry; biophysics; cell and molecular biology; conservation and sustainability; developmental biology; ecology and evolutionary biology; ecosystems and landscape ecology; forest dynamics; forest economics; forest management; genetics; photosynthesis; phylogenetics and systematics; physiology and ecophysiology; plant-microbe and plant-fungal interactions; plant production; plant virology; population biology; remote sensing/GIS/laser scanning (excl. method development)

# Politics, communication and gender

## Scope

This panel reviews applications from all research areas in political science, administrative sciences, international relations, media and communication studies, gender studies, and development studies.

If your application relates to health, welfare and society, please also consider the panel RC24\_22 (Health, welfare and society).

## Keywords

public administration; public policy; governance; democratic institutions; international and global institutions; elections; political parties; democracy; political participation; political agency; representation; interest groups; elites; expert governance; geographical perspectives in political studies; developing countries; global cooperation; Global South; political economy; foreign politics and diplomacy; peace; security; conflict; politics of international economics; social movements; NGOs; media systems and media platforms; media and creative labour; journalism; mediatisation; digitalisation; communication technologies; data; datafication; creative and cultural industries; media innovations; political and organisational communication; discrimination; diversity; LGBTQ+; masculinity; intersectionality; sexuality; intimacy; emotions and affects; disabilities

# RC24\_37

## Process engineering

### Scope

This panel covers technological and engineering research within the chemical, process and environmental area.

### Keywords

chemical engineering; industrial environmental engineering; waste and water treatment; separation technology; biomass refinery technology; technical chemistry



# RC24\_38

## Psychology and education

### Scope

The panel covers applications in the fields of psychology and education. Within education, the panel's emphasis is on processes and aspects of learning and wellbeing.

- Applicants in the field of education should evaluate whether their application is best suited to this panel or the panel RC24\_17 (Education).
- Applicants in the field of psycholinguistics and neurolinguistics should consider whether their application is best suited to this panel or the panel RC24\_27 (Linguistics).
- Applicants working on themes of health, welfare and society should also consider the panel RC24\_22 (Health, welfare and society).
- Applicants in the field of social psychology should consider whether their application is best suited to this panel or the panel RC24\_39 (Sociology, anthropology and social work).

### Keywords

attention and perception; memory; learning; emotions; personality; temperament; cognitive functions; individual development and life course; social cognition; cognition and metacognition in learning; executive function; (self-)regulation; motivation; self-efficacy; learning difficulties; digital learning and cognition; physical activity and learning; and teachers' occupational wellbeing and learning

Within psychology, the panel covers applications in developmental and educational psychology, systemic and cognitive neuroscience, health psychology, work and organisational psychology, psychotherapy, and, where applicable, social psychology, not excluding other possible fields.

Within education, the panel covers applications in general education and teacher education, special education, and early childhood education and preschool education, not excluding other possible fields.

# RC24\_39

## Sociology, anthropology and social work

### Scope

The panel reviews applications in sociology, social work, social anthropology, cultural anthropology, ethnology and folklore studies, as well as multidisciplinary studies contributing primarily to these research fields.

- If your research plan contributes to the field of gender studies, please choose the panel RC24\_36 (Politics, communication and gender)
- If your research plan theme is health, welfare and society, please choose the panel RC24\_22 (Health, welfare and society), which covers also demography and the influence of social factors on health and welfare.

If your research plan contributes, for instance, to the fields of criminology, development studies, education, environmental social science, human geography, social policy, social psychology, or study of religion, please consider also other relevant panels.

### Keywords

social structure, social mobility, social innovation; inequalities, discrimination, prejudice; social integration, exclusion, prosocial behaviour, violence; social attitudes and beliefs; social influence; power and group behaviour; work and employment; poverty and poverty alleviation; kinship; diversity and identities, interethnic relations; rituals; symbolic representation; cultural studies and theory, cultural identities and memories, cultural heritage

# Telecommunications & electronics

## Scope

The scope of the panel is in fundamental engineering research targeting communications engineering and electronics. Please note other panels for materials research and optics.

## Keywords

circuits and systems, analogue, digital and mixed signal electronics, RF electronics and antenna design; micro-, nano-, and printed electronics, micro- and nano-electronic components; computer hardware and reconfigurable architectures, computer architecture; radio engineering, wireless and high-frequency technology; communication and information theory, communication systems, communication networks and nodes

# RC24\_41

## Universe sciences and particle physics

### Scope

The panel covers all branches of astronomy and space science, and also the world of elementary particles and nuclei (microcosmos) studied in particle and nuclear physics.

### Keywords

galactic and extragalactic astronomy; astrophysics; astrochemistry; astrobiology; planetary science (Solar System research and exoplanetary science); solar and space physics; observational and theoretical cosmology; particle and nuclear physics