European Research Council
Established by the European Commission

European Commission

ERC Frontier Research in Physical Sciences and Engineering

This series of factsheets provides an overview of the projects funded by the European Research Council (ERC), in the Physical Sciences and Engineering domain, in the H2020 Framework Programme (2014–2020)

Data as of December 2021

PE

Mathematics (PE1)

This fact sheet provides an overview of the projects funded in the 'Mathematics' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

1836 applications
(3.4% of total)

231 projects funded
(3.5% of total)

92 projects
(€115M)

76 projects
(€118M)

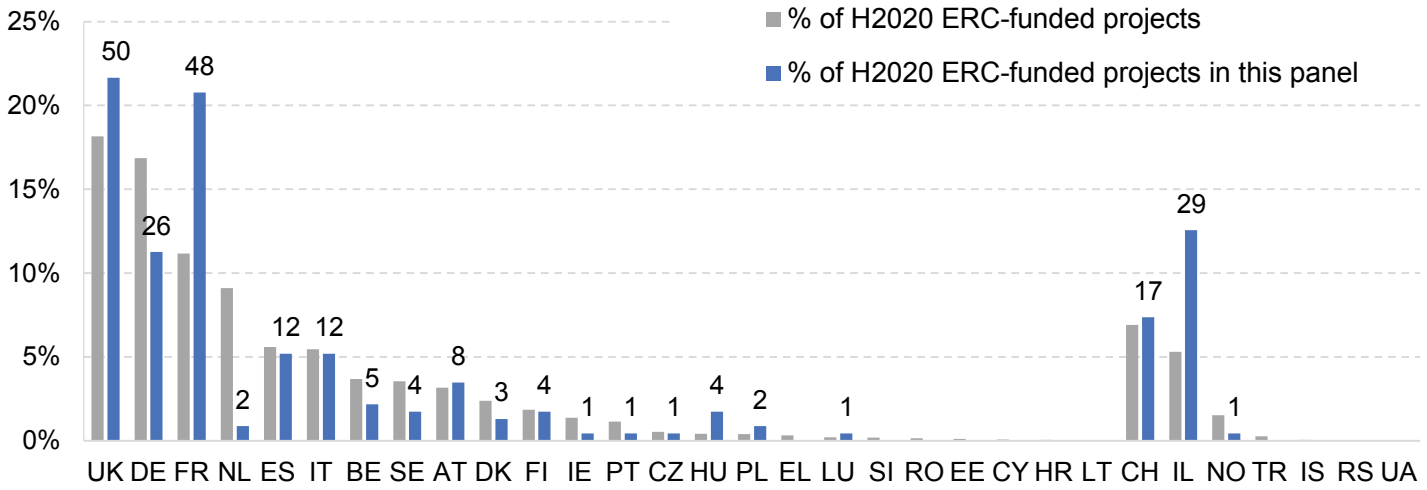
63 projects
(€120M)

29 female grantees
(13% of grantees in this panel)

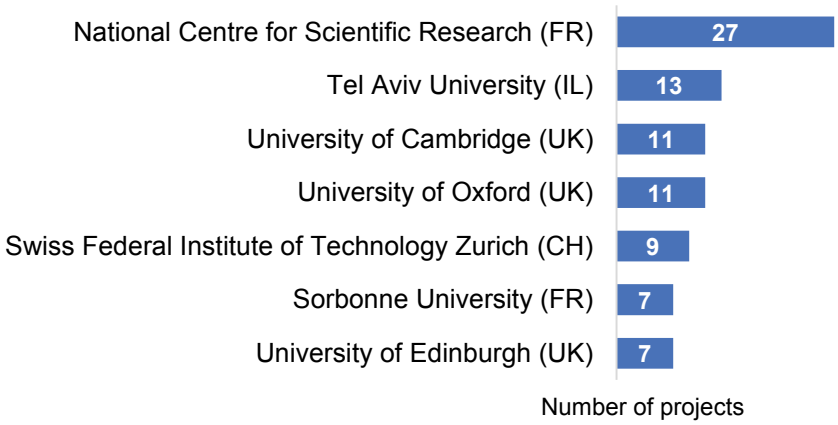
€353 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

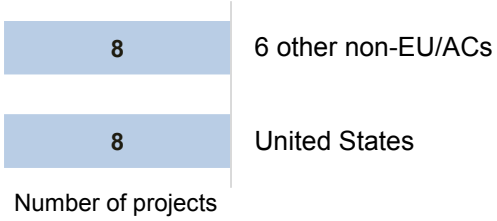
The 231 funded projects (numbers in the graph) are in 17 EU Member States and 3 Associated Countries (ACs)



Host institutions with ≥7 funded projects

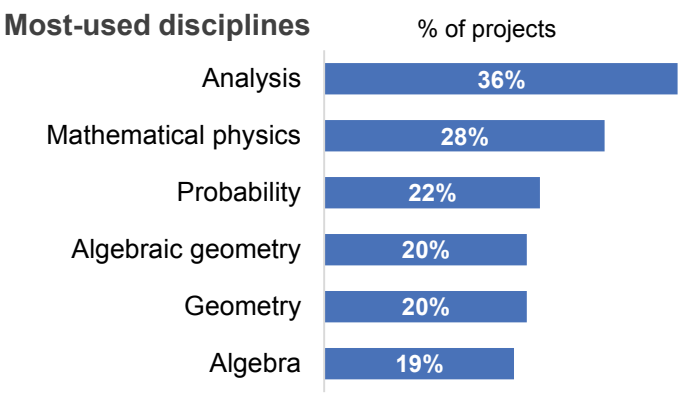


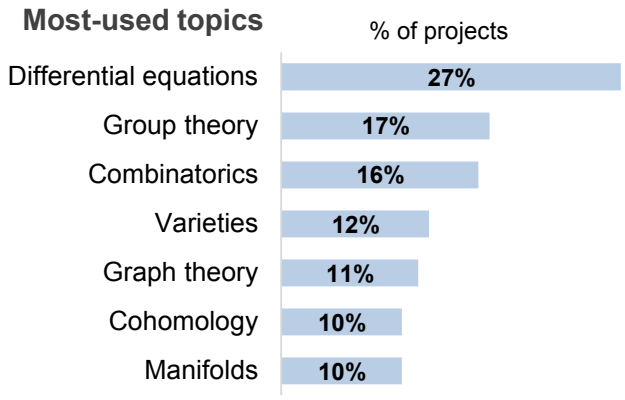
Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

Scientific landscape of ERC-funded projects in this panel

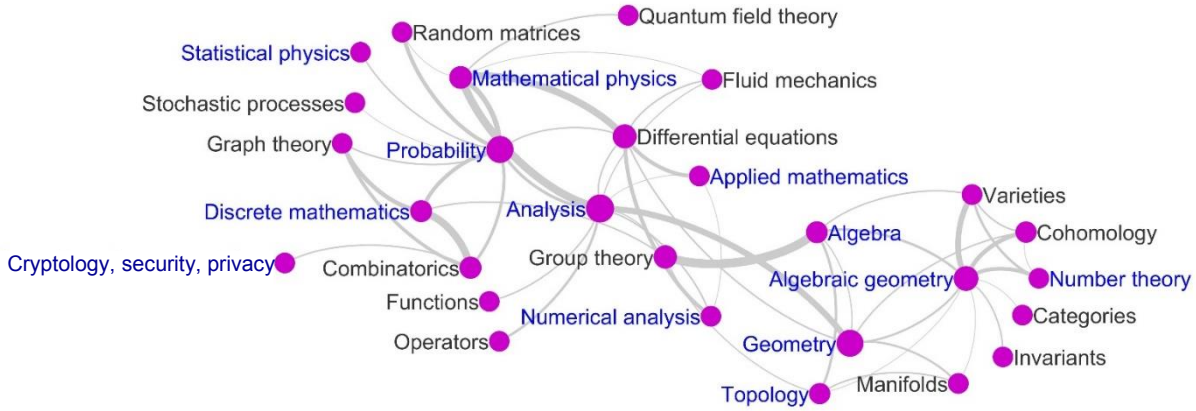




- *Algebraic geometry* and *Varieties* grew in use from 2014 to 2020
- *Geometry*, *Mathematical Physics, Differential equations* and *Graph theory* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Discrete mathematics* and *Stochastic Processes* were used more in CoG projects and *Number theory, Applied mathematics* and *Quantum Field Theory* in AdG projects
- A high number of projects in this panel generate methodological developments. *Analytic methods, Geometric methods* and *Probabilistic methods* are the main ones

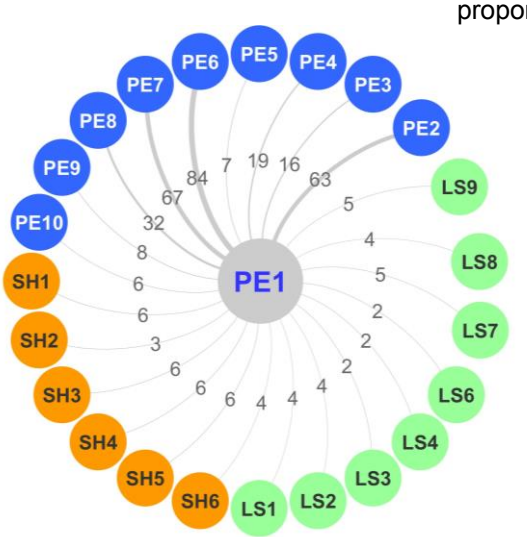
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Computer Science and Informatics (PE6), Systems and Communication Engineering (PE7), and Fundamental Constituents of Matter (PE2) panels through the disciplines *Mathematical physics, Applied mathematics* and *Discrete mathematics*
- **LS domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Fundamental Constituents of Matter (PE2)

This fact sheet provides an overview of the projects funded in the 'Fundamental Constituents of Matter' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2561 applications
(4.7% of total)

326 projects funded
(4.9% of total)

129 projects
(€190M)

114 projects
(€216M)

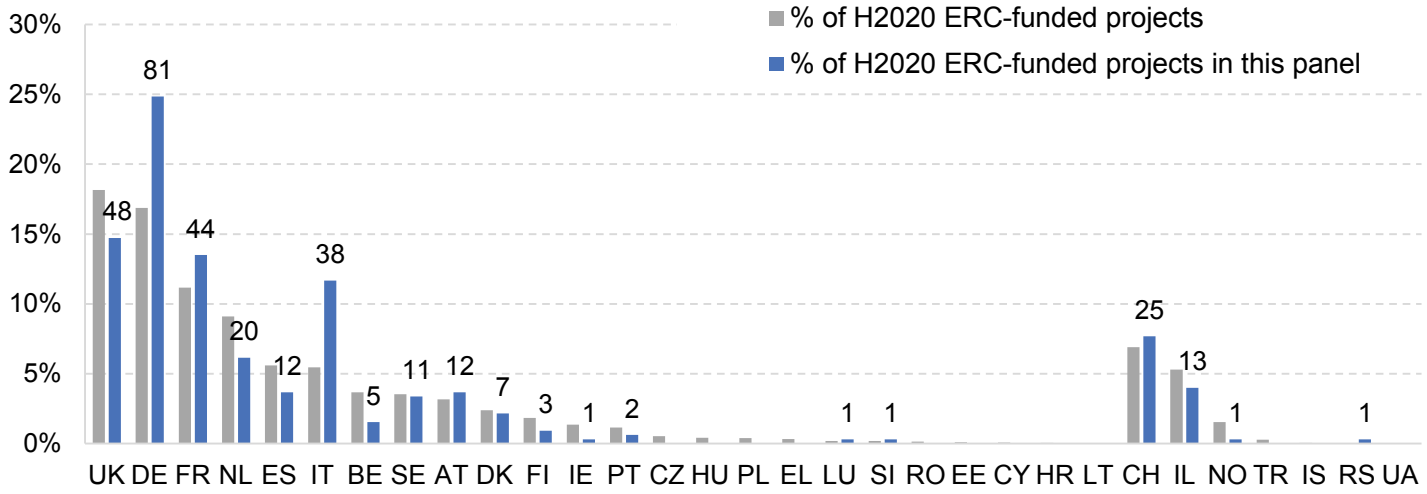
83 projects
(€197M)

60 female grantees
(18% of grantees in this panel)

€603 million budget

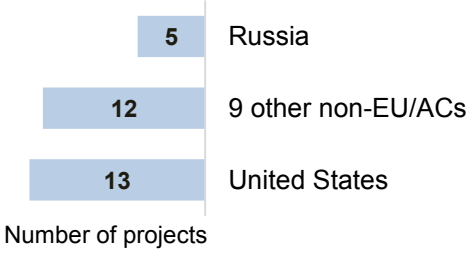
Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

The 326 funded projects (numbers in the graph) are in 15 EU Member States and 4 Associated Countries (ACs)



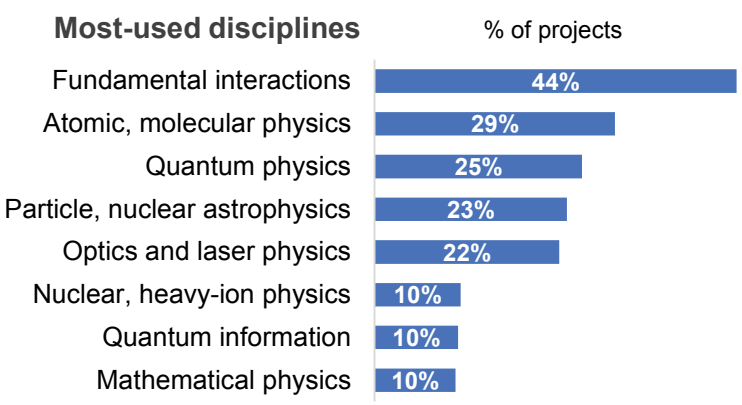
Host institutions with ≥7 funded projects

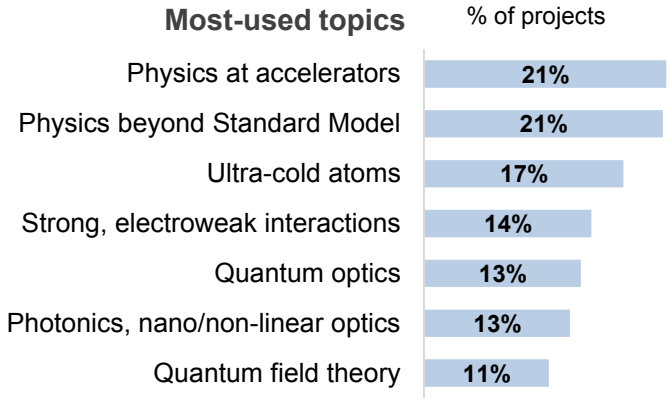
Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

Scientific landscape of ERC-funded projects in this panel

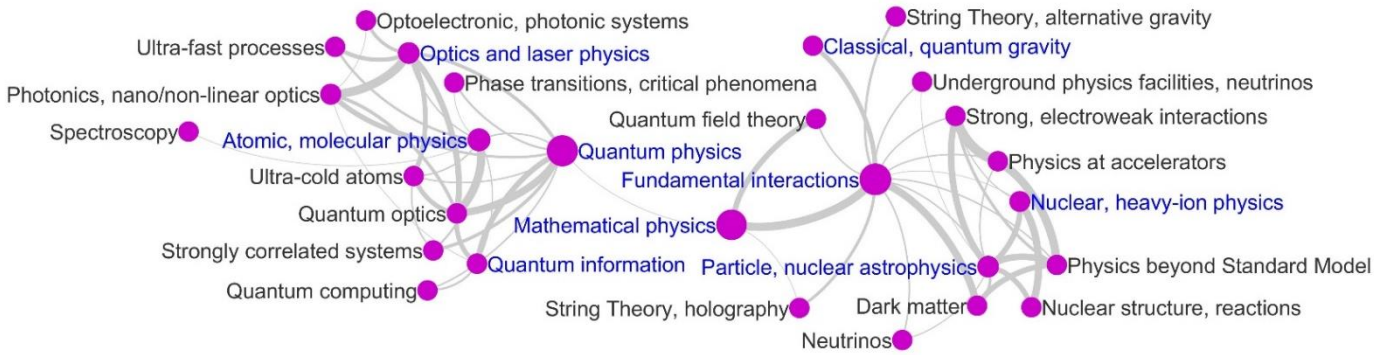




- *Quantum physics*, *Physics at accelerators* and *Physics beyond Standard Model* grew in use from 2014 to 2020
- *Mathematical physics* and *Strong, electroweak interactions* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Particle, nuclear astrophysics*, *Optics and laser physics,* and *Quantum optics* were used more in AdG projects
- A high number of projects in this panel generate methodological developments. *Experimental methods in physics, Theoretical, mathematical methods* and *Quantum methods* are the main ones

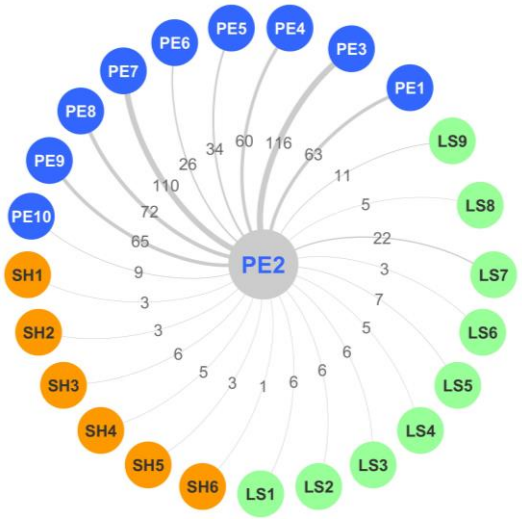
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Condensed Matter Physics (PE3), and Systems and Communication Engineering (PE7) panels through the disciplines *Optics and laser physics,* and *Quantum physics*
- **LS domain**: the interaction is not very strong, but there is some connection with the Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7) panel
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Condensed Matter Physics (PE3)

This fact sheet provides an overview of the projects funded in the 'Condensed Matter Physics' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2369 applications
(4.4% of total)

294 projects funded
(4.4% of total)

120 projects
(€190M)

103 projects
(€209M)

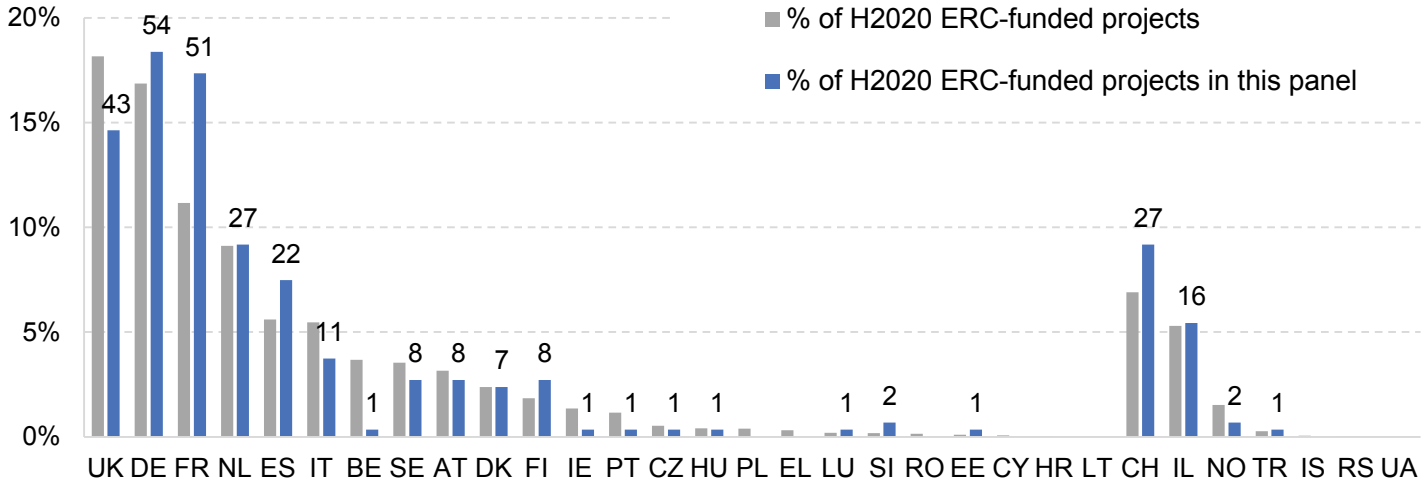
71 projects
(€171M)

51 female grantees
(17% of grantees in this panel)

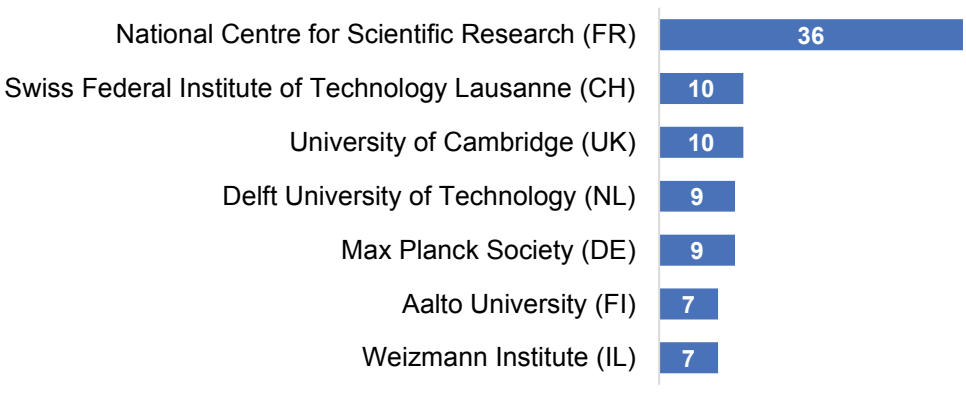
€570 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

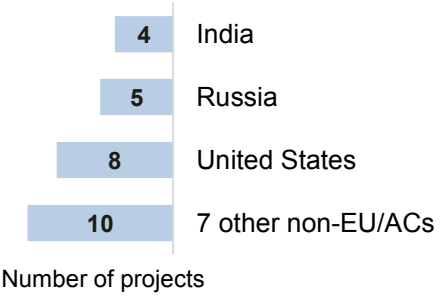
The 294 funded projects (numbers in the graph) are in 18 EU Member States and 4 Associated Countries (ACs)



Host institutions with ≥7 funded projects

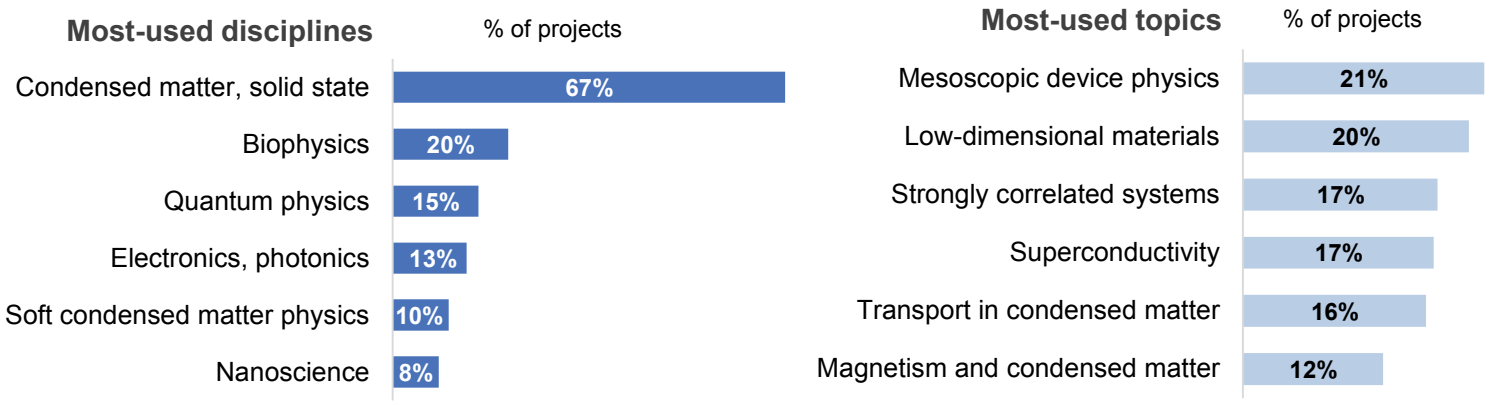


Country of origin of grantees other than EU or ACs (≤3 grouped together)



Data as of December 2021

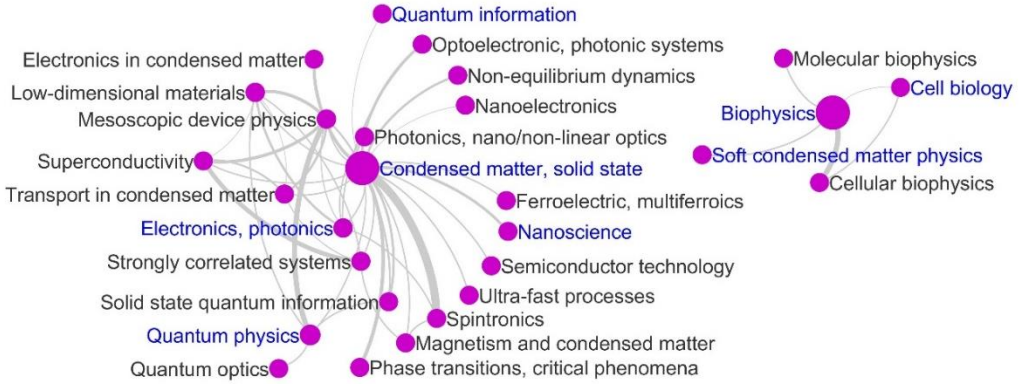
Scientific landscape of ERC-funded projects in this panel



- *Quantum physics*, *Soft condensed matter physics* and *Non-equilibrium dynamics* grew in use from 2014 to 2020
- *Condensed matter, solid state, Strongly correlated systems,* and *Magnetism and condensed matter* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Biophysics, Low-dimensional materials* and *Transport in condensed matter* were used more in CoG projects
- Around 1/5 of projects in this panel generate methodological developments. *Microscopy* and *Computational modelling, simulations* are the main ones

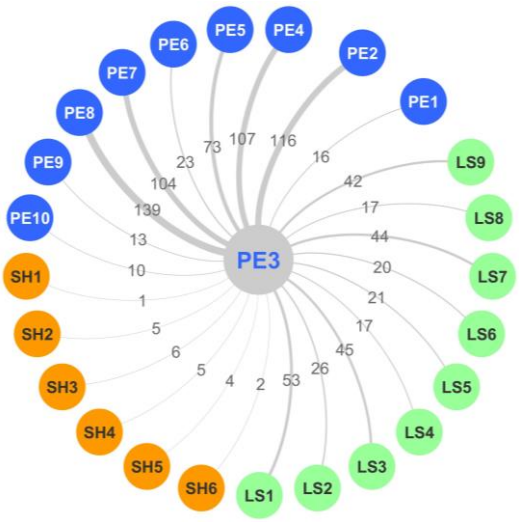
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Products and Processes Engineering (PE8), Fundamental Constituents of Matter (PE2), and Physical and Analytical Chemical Sciences (PE4) panels through the disciplines *Quantum physics, Electronics, photonics* and *Biophysics*
- **LS domain**: the main interactions are with the Molecular Biology, Biochemistry, Structural Biology and Molecular Biophysics (LS1), Cellular and Developmental Biology (LS3), and Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7) panels through the disciplines *Biophysics* and *Cell biology*
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Physical and Analytical Chemical Sciences (PE4)

This fact sheet provides an overview of the projects funded in the 'Physical and Analytical Chemical Sciences' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2192 applications
(4.1% of total)

267 projects funded
(4.0% of total)

StG **104** projects
(€167M)

CoG **100** projects
(€203M)

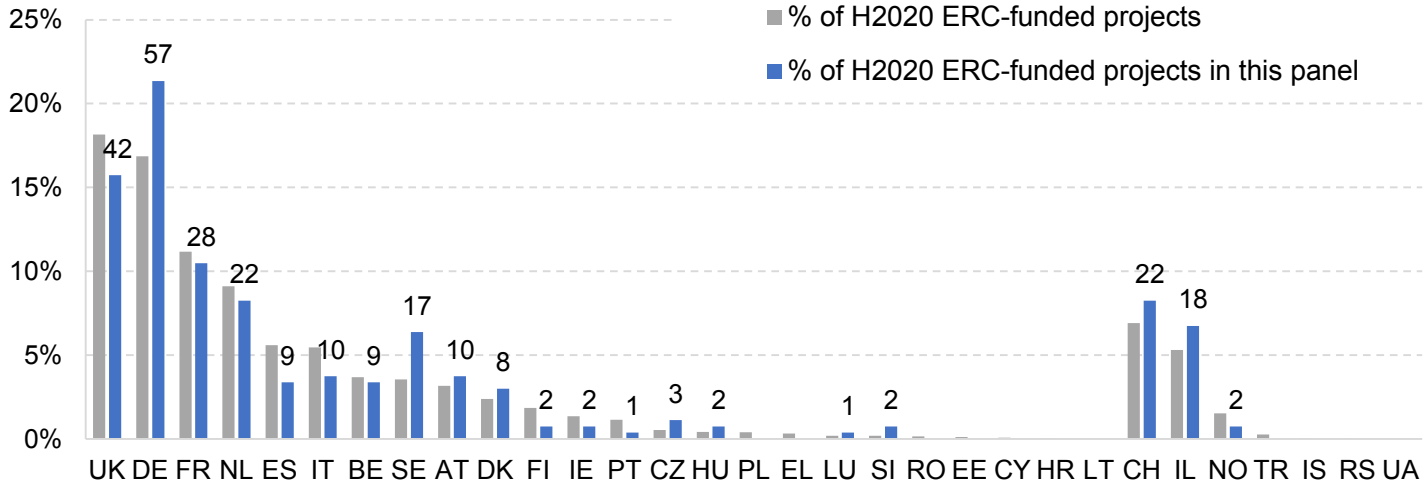
AdG **63** projects
(€158M)

59 female grantees
(22% of grantees in this panel)

€528 million budget

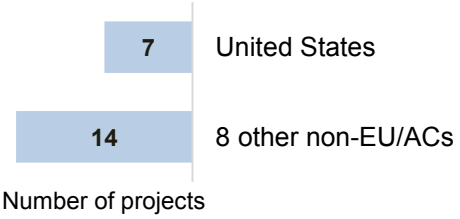
Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

The 267 funded projects (numbers in the graph) are in 17 EU Member States and 3 Associated Countries (ACs)



Host institutions with ≥7 funded projects

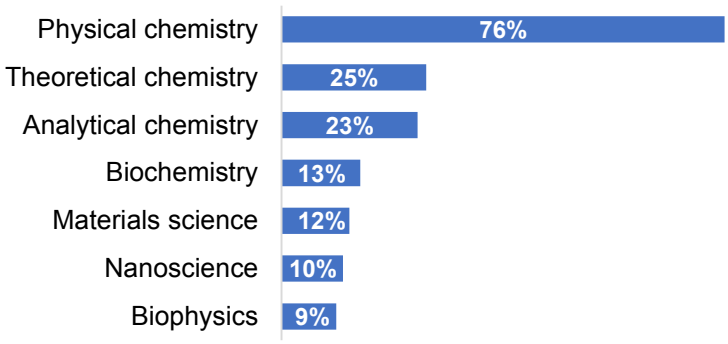
Country of origin of grantees other than EU or ACs (≤3 grouped together)



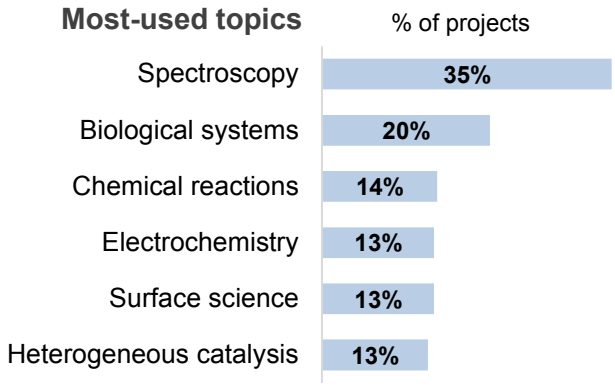
*Data as of December 2021

Scientific landscape of ERC-funded projects in this panel

Most-used disciplines



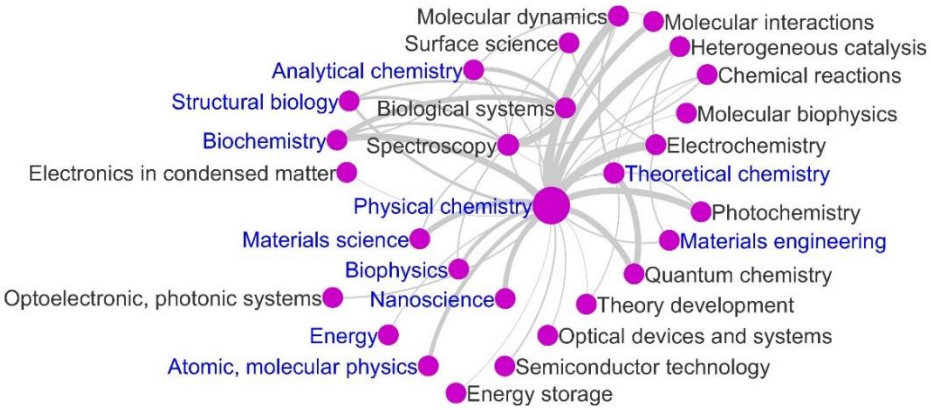
Most-used topics



- *Biochemistry, Biophysics* and *Chemical reactions* grew in use from 2014 to 2020
- *Theoretical chemistry, Heterogeneous catalysis and Electrochemistry* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Biochemistry, Spectroscopy* and *Surface science* were used more in AdG projects
- A high number of projects in this panel aim at generating methodological developments. *Spectroscopic techniques*, *Experimental methods in chemistry* and *Computational modelling, simulations* are the main ones

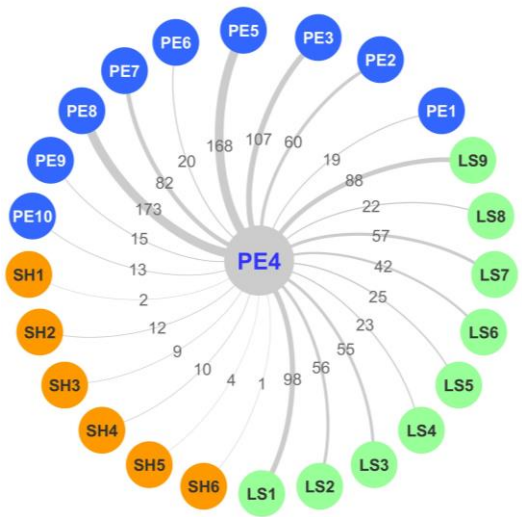
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Products and Processes Engineering (PE8), Synthetic Chemistry and Materials (PE5), and Condensed Matter Physics (PE3) panels through the disciplines *Materials science, Nanoscience, Physical chemistry* and *Biophysics*
- **LS domain**: the main interactions are with the Molecular Biology, Biochemistry, Structural Biology and Molecular Biophysics (LS1), and Applied Life Sciences, Biotechnology, and Molecular and Biosystems Engineering (LS9) panels through the discipline *Biochemistry*
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Synthetic Chemistry and Materials (PE5)

This fact sheet provides an overview of the projects funded in the 'Synthetic Chemistry and Materials' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2653 applications
(4.9% of total)

335 projects funded
(5.1% of total)

StG **143** projects
(€218M)

CoG **115** projects
(€228M)

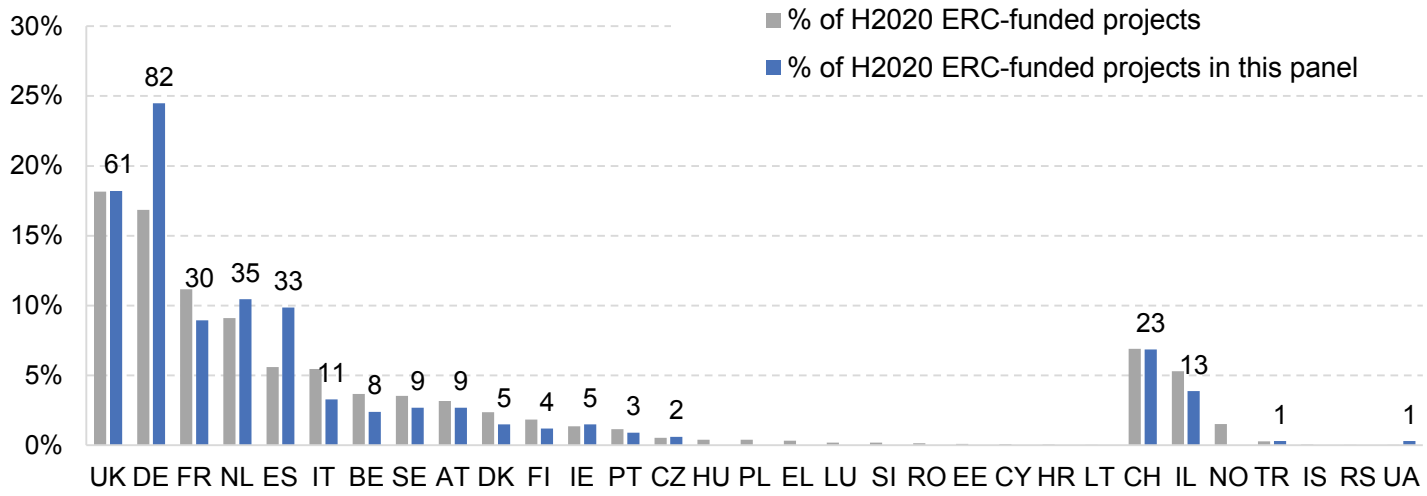
AdG **77** projects
(€190M)

70 female grantees
(21% of grantees in this panel)

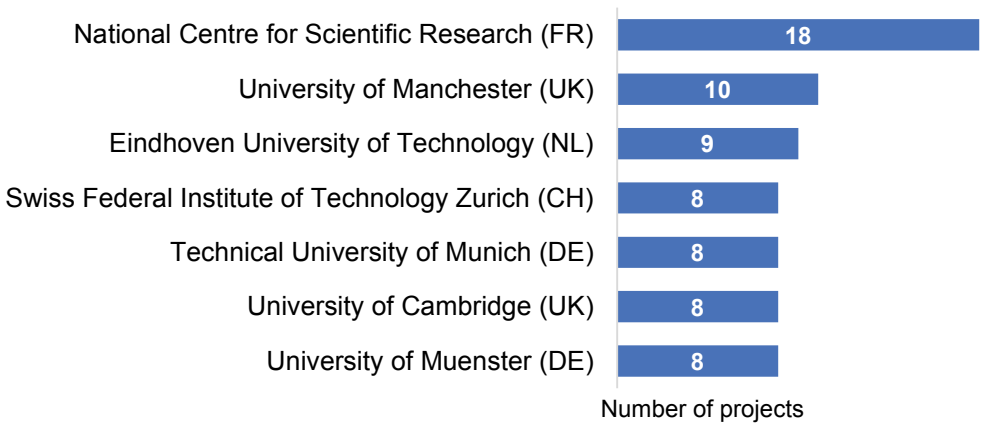
€636 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

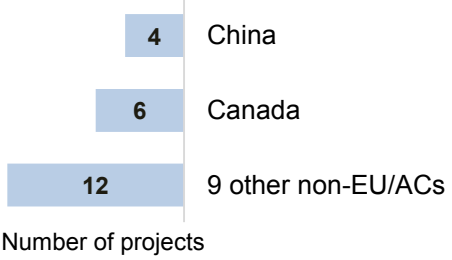
The 335 funded projects (numbers in the graph) are in 14 EU Member States and 4 Associated Countries (ACs)



Host institutions with ≥8 funded projects

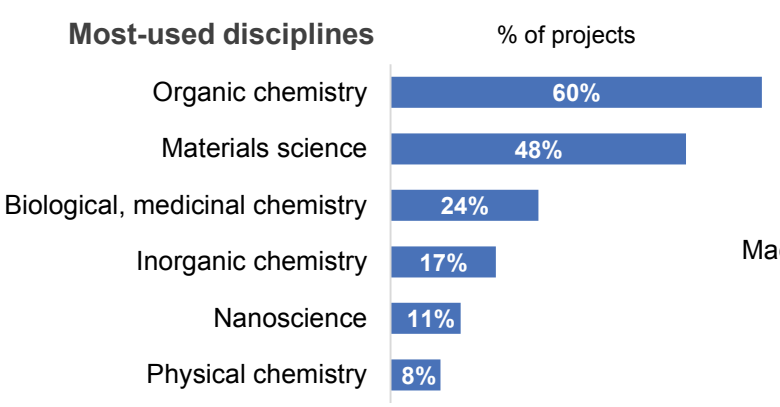


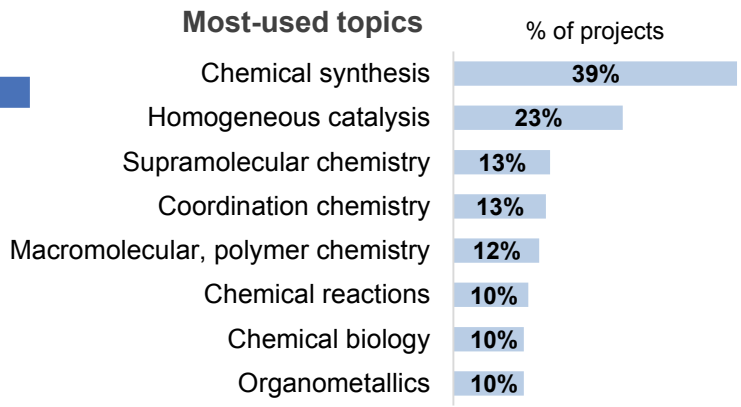
Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

Scientific landscape of ERC-funded projects in this panel

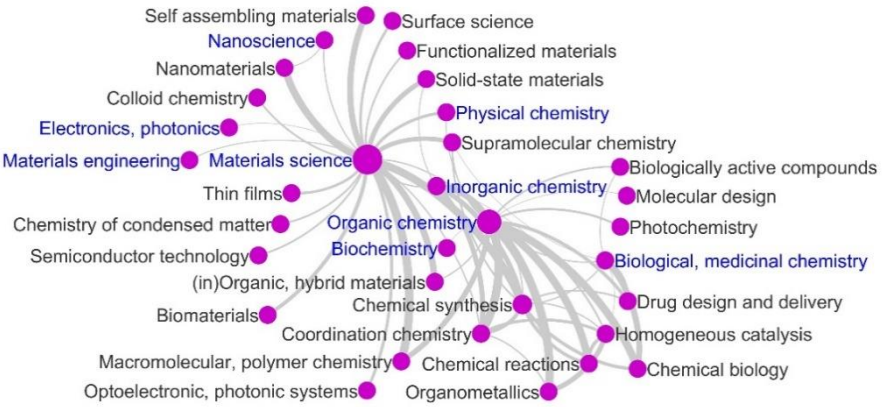




- *Homogeneous catalysis* and *Chemical biology* grew in use from 2014 to 2020
- *Biological, medicinal chemistry* was used more in CoG projects compared to those funded in StG and AdG schemes while *Chemical synthesis, Supramolecular chemistry, Chemical biology* and *Organic chemistry* were used more in AdG projects
- More than half of the projects in this panel generate methodological developments. *Synthetic methods* and *Experimental methods in chemistry* are the main ones

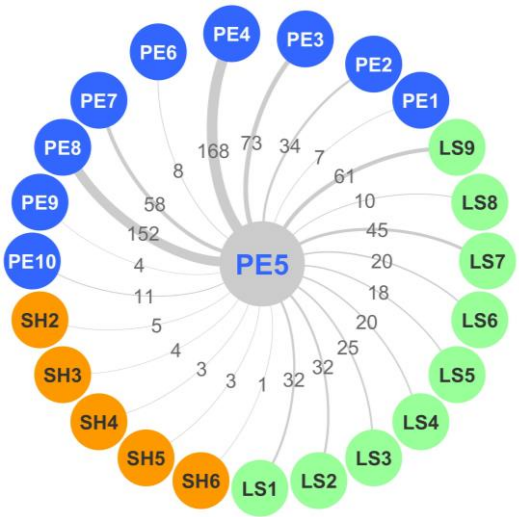
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Physical and Analytical Chemical Sciences (PE4), and Products and Processes Engineering (PE8) panels through the disciplines *Materials science, Nanoscience* and *Physical chemistry*
- **LS domain**: the main interactions are with the Applied Life Sciences, Biotechnology, and Molecular and Biosystems Engineering (LS9), and Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7) panels through the disciplines *Biochemistry* and *Biotechnology*
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Computer Science and Informatics (PE6)

This fact sheet provides an overview of the projects funded in the 'Computer Science and Informatics' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2789 applications
(5.2% of total)

348 projects funded
(5.3% of total)

160 projects
(€234M)

114 projects
(€215M)

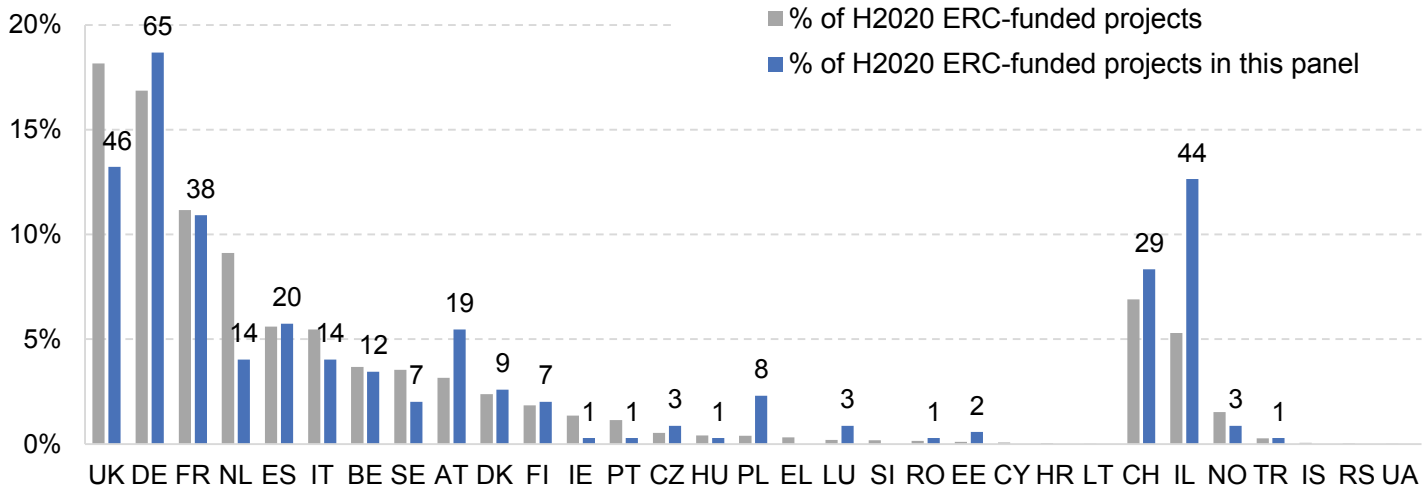
74 projects
(€177M)

55 female grantees
(16% of grantees in this panel)

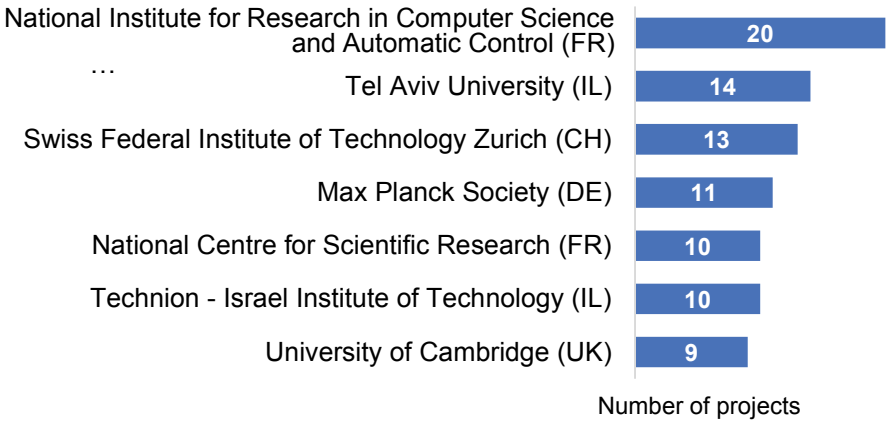
€626 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

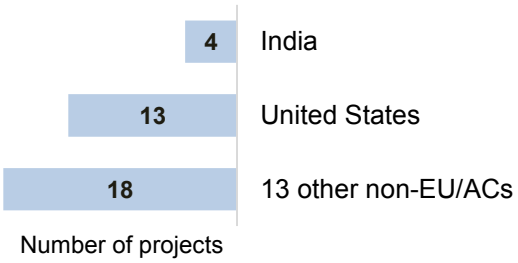
The 348 funded projects (numbers in the graph) are in 19 EU Member States and 4 Associated Countries (ACs)



Host institutions with ≥9 funded projects

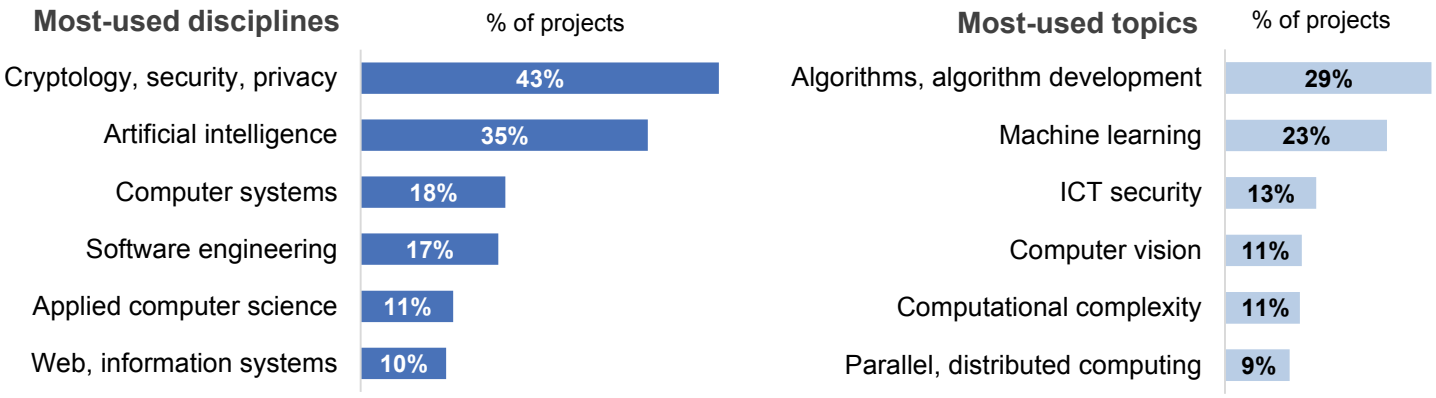


Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

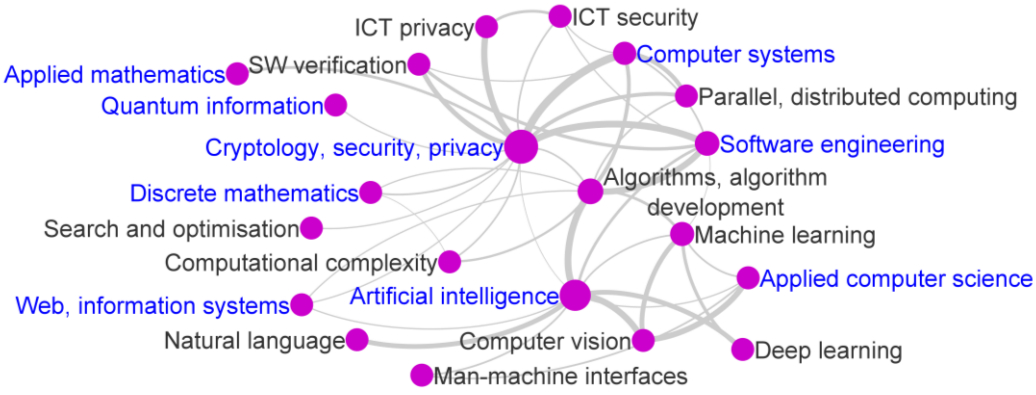
Scientific landscape of ERC-funded projects in this panel



- *Applied computer science, Algorithms, algorithm development* and *Machine learning* grew in use from 2014 to 2020
- *Applied mathematics, Machine learning* and *Parallel, distributed computing* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Software engineering* and *ICT security* were used more in AdG projects
- More than half of the projects in this panel generate methodological developments. *Theoretical, mathematical methods* and *Computational modelling, simulations* are the main ones

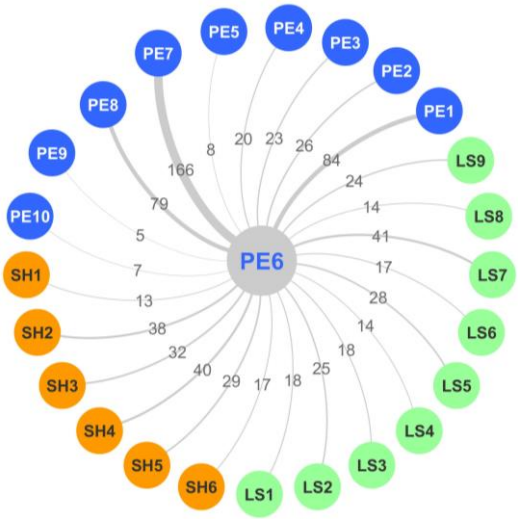
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interaction is with the Systems and Communication Engineering (PE7) panel and to a lesser extent with the Mathematics (PE1), and Products and Processes Engineering (PE8) panels through the disciplines *Applied mathematics, Applied computer science* and *Software engineering*
- **LS domain**: the interaction is not very strong, but there is some connection with the Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7) panel
- **SH domain**: the interaction is not very strong, but there are some connections with The Human Mind and Its Complexity (SH4), and Institutions, Values, Environment and Space (SH2) panels

Systems and Communication Engineering (PE7)

This fact sheet provides an overview of the projects funded in the 'Systems and Communication Engineering' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2226 applications
(4.1% of total)

276 projects funded
(4.2% of total)

StG **122** projects
(€193M)

CoG **91** projects
(€188M)

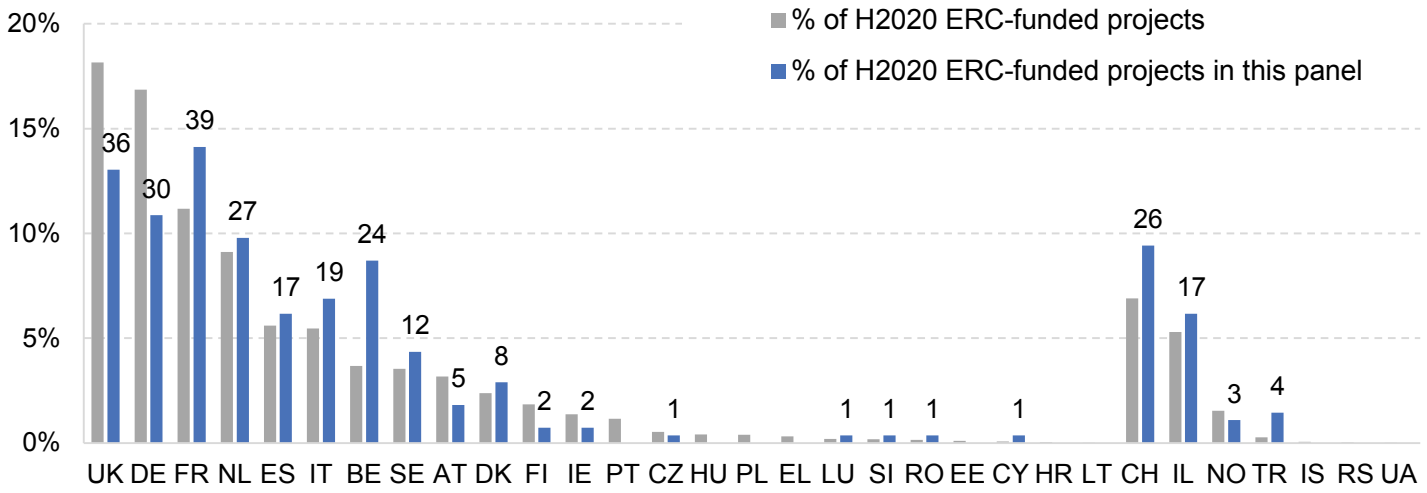
AdG **63** projects
(€160M)

54 female grantees
(20% of grantees in this panel)

€541 million budget

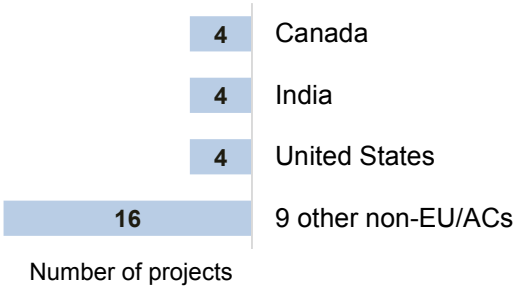
Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

The 276 funded projects (numbers in the graph) are in 17 EU Member States and 4 Associated Countries (ACs)



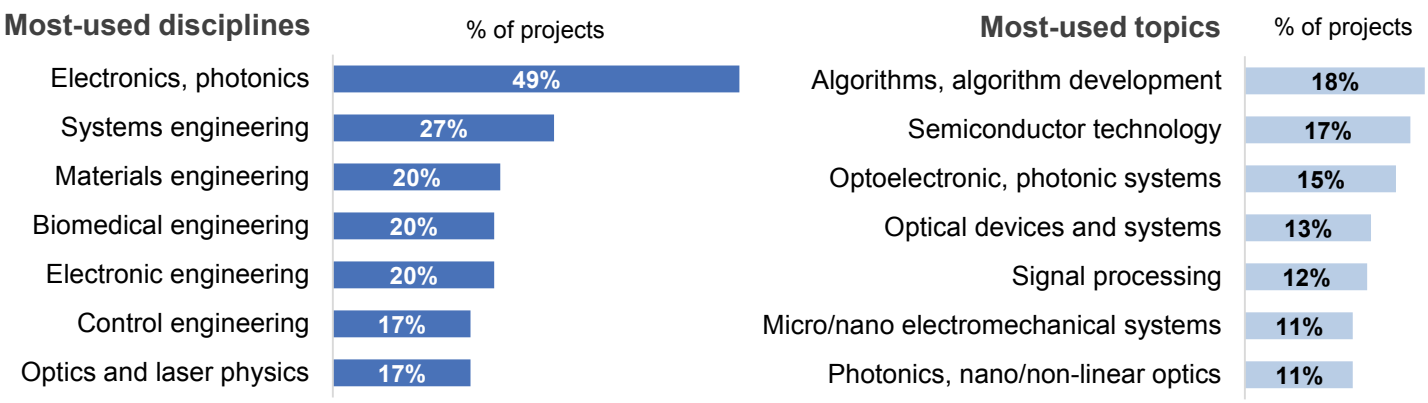
Host institutions with ≥7 funded projects

Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

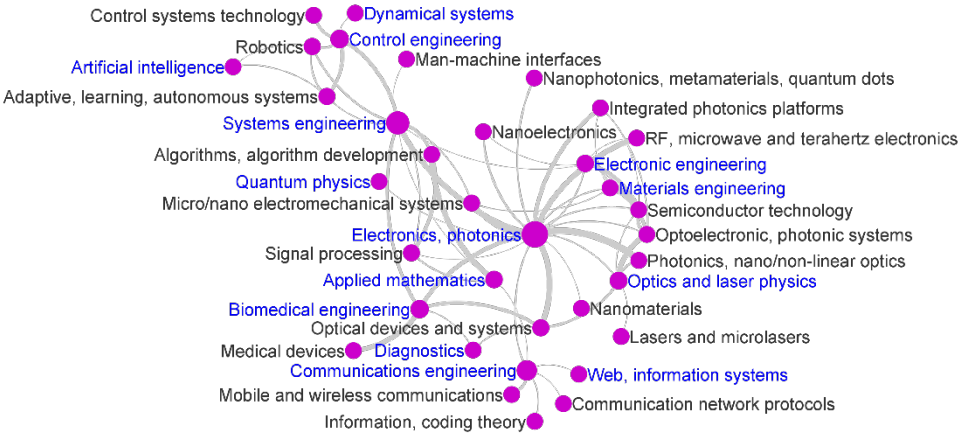
Scientific landscape of ERC-funded projects in this panel



- *Control engineering* and *Adaptive, learning, autonomous systems* grew in use from 2014 to 2020
- *Electronics, photonics*, *Biomedical engineering, Photonics, nano/non-linear optics,* and *Optical devices and systems* were used more in StG and CoG projects compared to those funded in AdG scheme, while *Control engineering* was used more in AdG projects
- A high number of projects in this panel generate methodological developments. *Experimental methods in engineering, Computational modelling, simulations* and *Validation, demonstration, prototyping* are the main ones

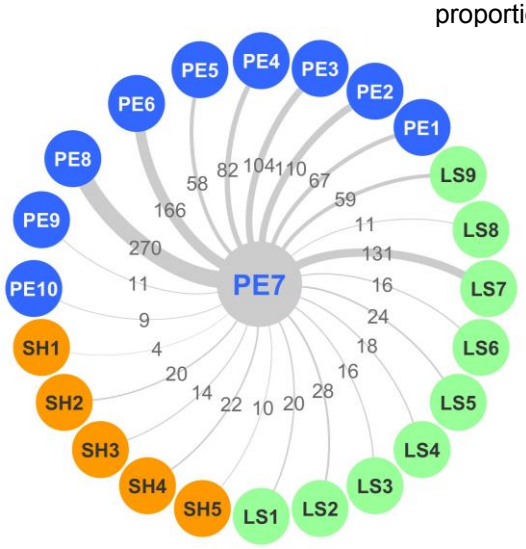
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Products and Processes Engineering (PE8), Computer Science and Informatics (PE6), and Fundamental Constituents of Matter (PE2) panels through the disciplines *Materials engineering, Biomedical engineering, Optics and laser physics, Electronics, photonics* and *Applied mathematics*
- **LS domain**: the main interaction is with the Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7) panel through the discipline *Biomedical engineering*
- **SH domain**: the interaction is not very strong, but there are some connections with The Human Mind and Its Complexity (SH4), and the Institutions, Values, Environment and Space (SH2) panels through the disciplines *Artificial intelligence* and *Neuroscience*

Products and Processes Engineering (PE8)

This fact sheet provides an overview of the projects funded in the 'Products and Processes Engineering' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

3148 applications
(5.8% of total)

369 projects funded
(5.6% of total)

157 projects
(€246M)

121 projects
(€243M)

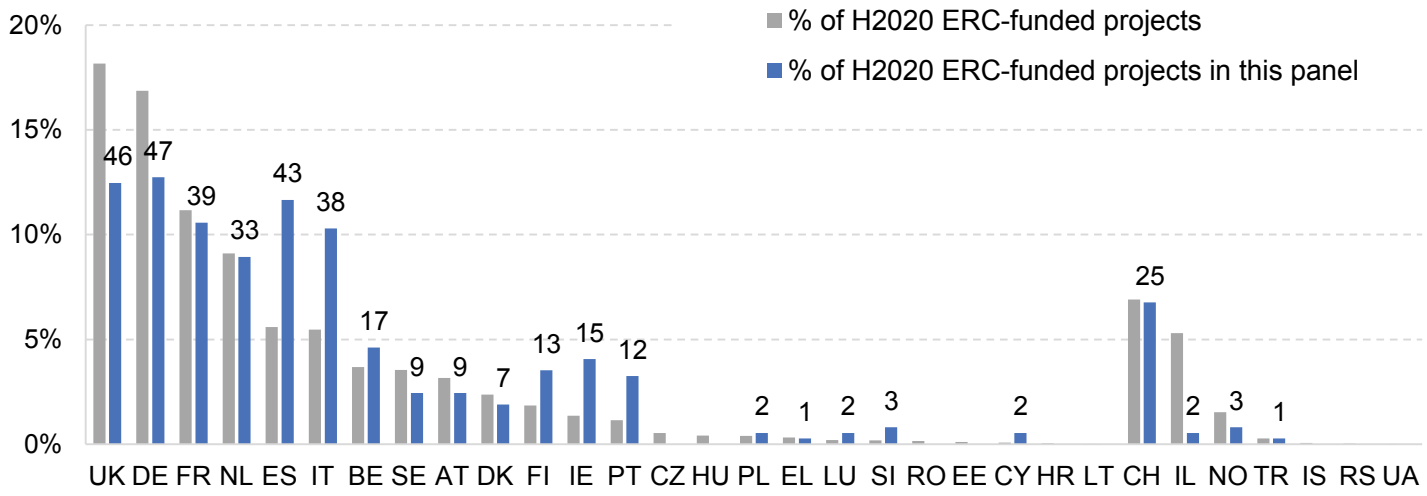
91 projects
(€227M)

91 female grantees
(25% of grantees in this panel)

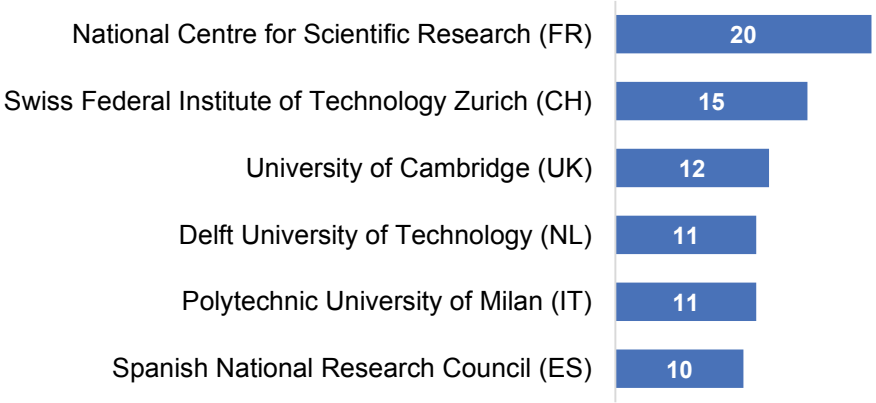
€716 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

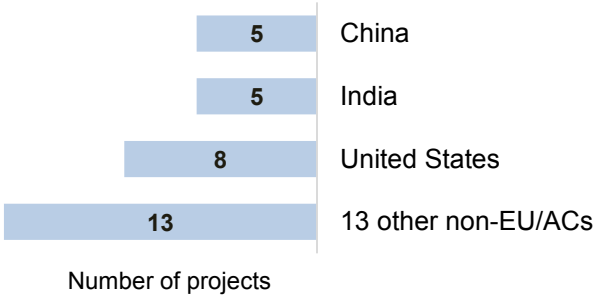
The 369 funded projects (numbers in the graph) are in 18 EU Member States and 4 Associated Countries (ACs)



Host institutions with ≥10 funded projects

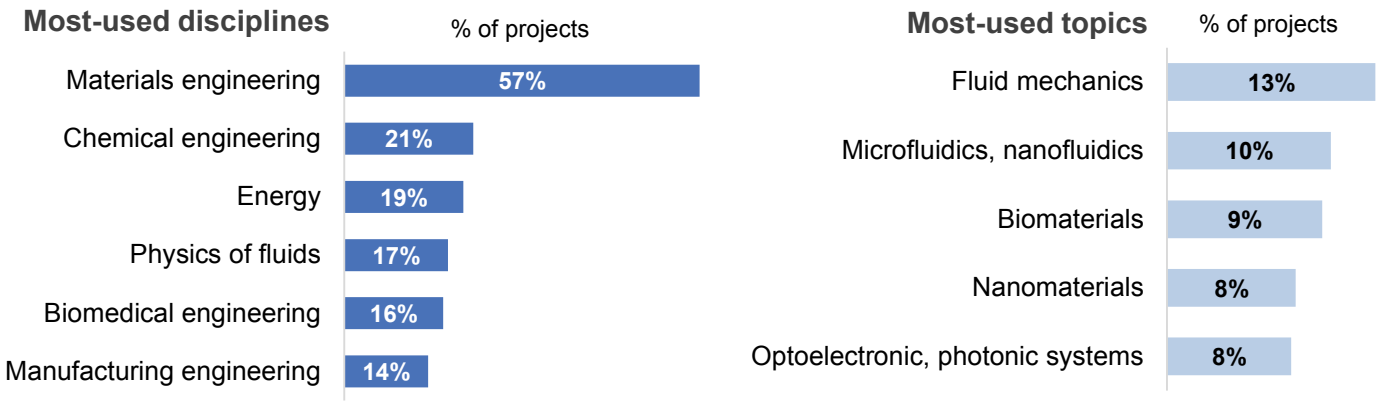


Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

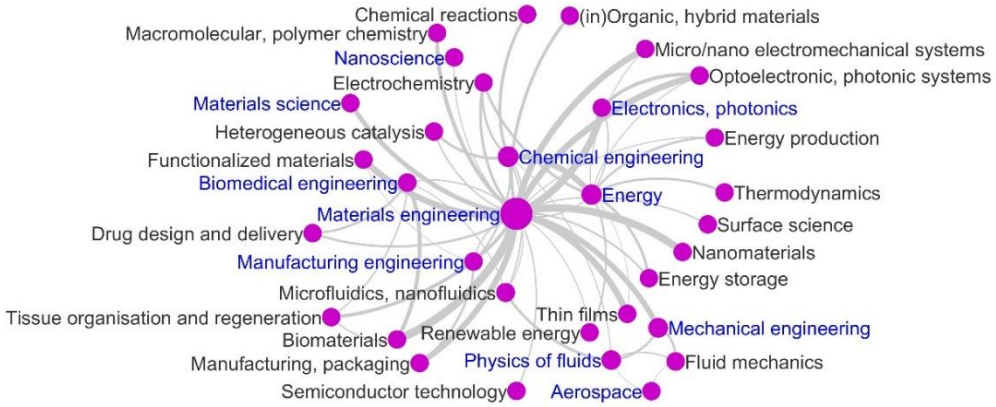
Scientific landscape of ERC-funded projects in this panel



- *Materials science* and *Fluid mechanics* grew in use from 2014 to 2020
- *Energy* was used more in StG and CoG projects compared to those funded in AdG scheme, while *Chemical engineering*, *Physics of fluids*, *Manufacturing engineering, Fluid mechanics* and *Microfluidics, nanofluidics* were used more in AdG projects
- A high number of projects in this panel generate methodological developments. *Computational modelling, simulations* and *Micro/nanoengineering* are the main ones

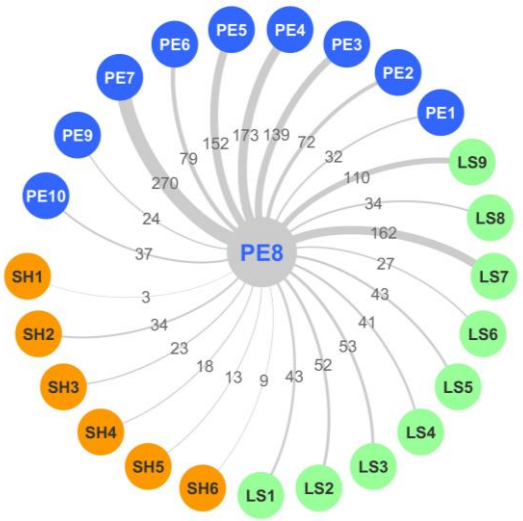
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interactions are with the Systems and Communication Engineering (PE7), Physical and Analytical Chemical Sciences (PE4), and Synthetic Chemistry and Materials (PE5) panels through the disciplines *Materials engineering, Biomedical engineering,* and *Materials science*
- **LS domain**: the main interactions are with the Applied Medical Technologies, Diagnostics, Therapies and Public Health (LS7), and Applied Life Sciences, Biotechnology, and Molecular and Biosystems Engineering (LS9) panels through the disciplines *Biomedical engineering* and *Biotechnology*
- **SH domain**: the interaction is not very strong, but there is some connection with the Institutions, Values, Environment and Space (SH2) panel through the discipline *Energy*

Universe Sciences (PE9)

This fact sheet provides an overview of the projects funded in the 'Universe Sciences' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2049 applications
(3.8% of total)

242 projects funded
(3.7% of total)

StG **87** projects
(€131M)

CoG **92** projects
(€181M)

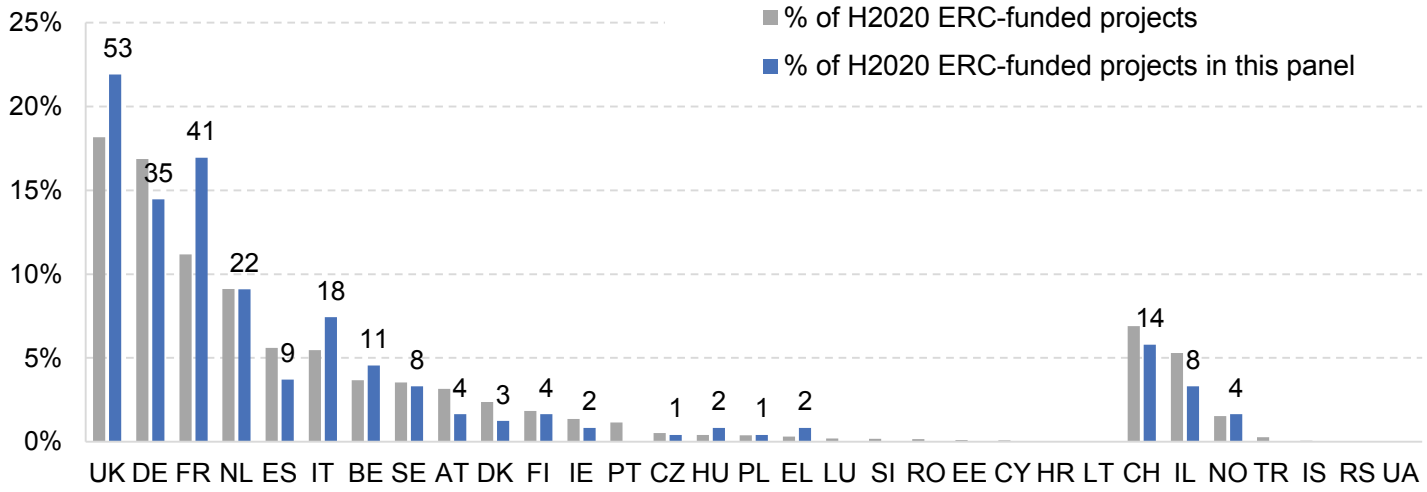
AdG **63** projects
(€159M)

73 female grantees
(30% of grantees in this panel)

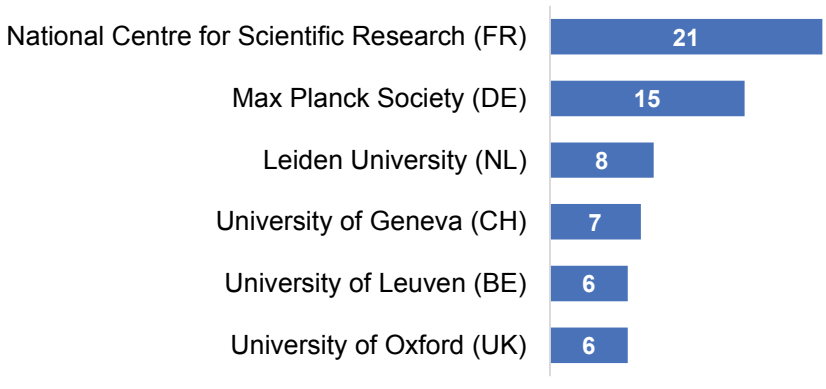
€471 million budget

Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

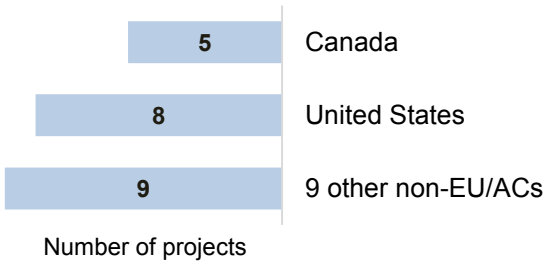
The 242 funded projects (numbers in the graph) are in 16 EU Member States and 3 Associated Countries (ACs)



Host institutions with ≥6 funded projects

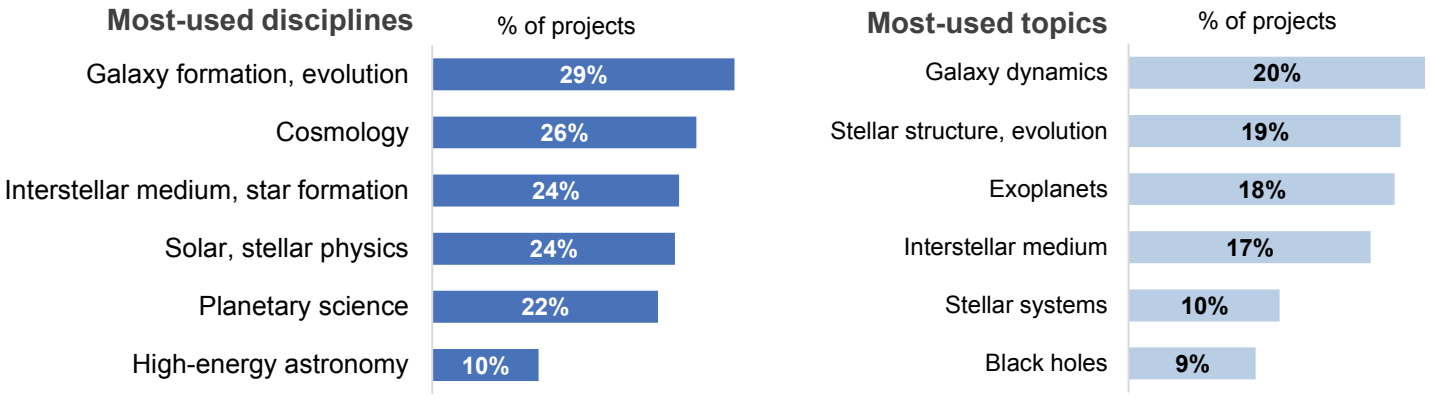


Country of origin of grantees other than EU or ACs (≤3 grouped together)



*Data as of December 2021

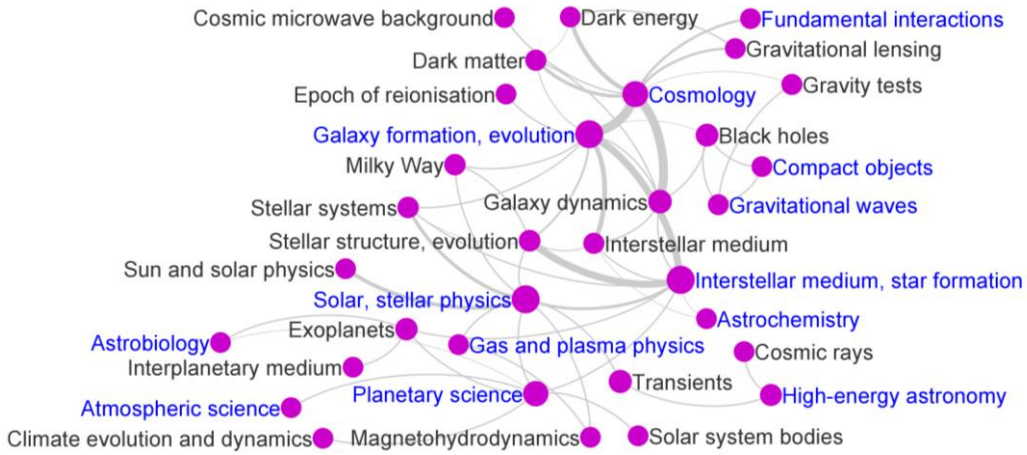
Scientific landscape of ERC-funded projects in this panel



- *Planetary science* and *Exoplanets* grew in use from 2014 to 2020. Noteworthy is the increase of projects studying the atmospheres and climates of (exo)planets, analysing their habitability and searching for signatures of life beyond Earth
- *Cosmology*, *High-energy astronomy* and *Stellar systems* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Solar, stellar physics* and *Stellar structure, evolution* were used more in CoG projects and *Galaxy formation, evolution* and *Galaxy dynamics* in AdG projects
- Around 3/4 of projects in this panel generate methodological developments. *Computational modelling* and *Observations* are the main ones

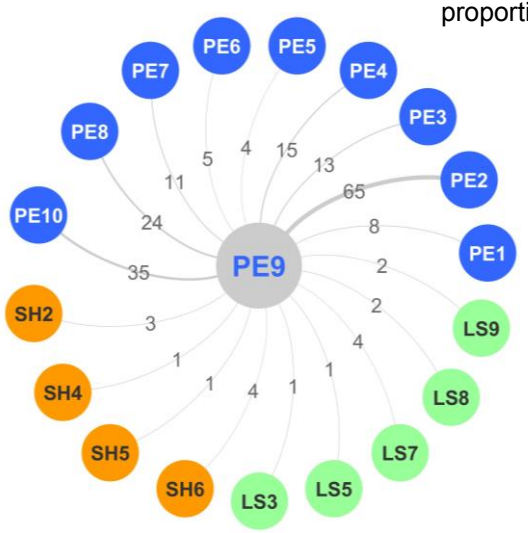
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together



Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the main interaction is with the Fundamental Constituents of Matter (PE2) panel and to a lesser extent with the Earth System Science (PE10) panel through the disciplines *Fundamental interactions, Gas and plasma physics, Atmospheric science* and *Interstellar medium, star formation*
- **LS domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy
- **SH domain**: the interaction is not very strong, there are no particular panels or disciplines highlighting any synergy

Earth System Science (PE10)

This fact sheet provides an overview of the projects funded in the 'Earth System Science' panel in the Physical Sciences and Engineering (PE) domain (see ERC panel structure). The projects were funded under the Starting Grant (StG), Consolidator Grant (CoG) and Advanced Grant (AdG) calls launched in the H2020 Framework Programme (2014–2020)*

2324 applications
(4.3% of total)

262 projects funded
(4.0% of total)

99 projects
(€162M)

96 projects
(€199M)

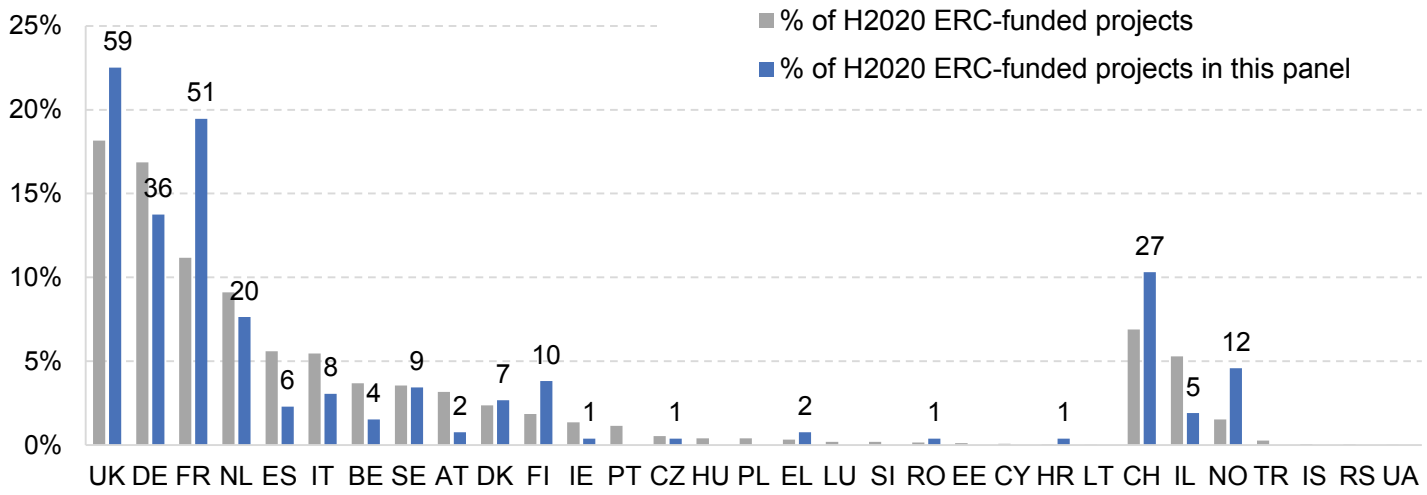
67 projects
(€184M)

87 female grantees
(33% of grantees in this panel)

€545 million budget

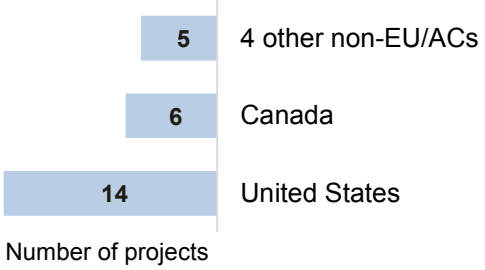
Distribution of ERC-funded projects in EU Member States and Associated Countries in H2020

The 262 funded projects (numbers in the graph) are in 16 EU Member States and 3 Associated Countries (ACs)



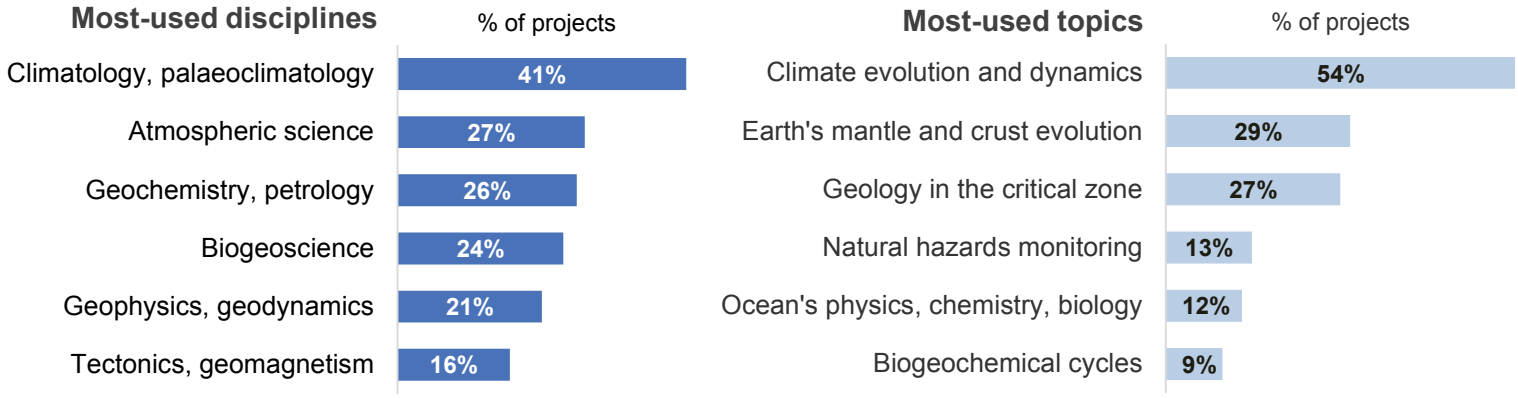
Host institutions with ≥6 funded projects

Country of origin of grantees other than EU or ACs (≤3 grouped together)



Data as of December 2021

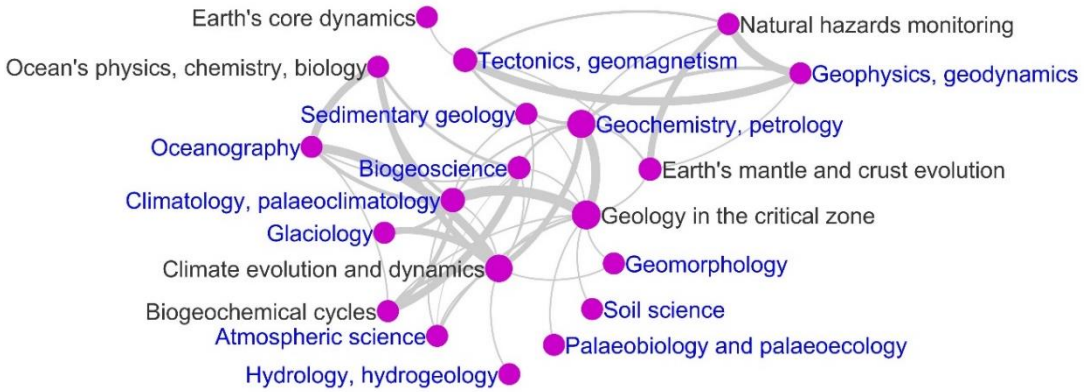
Scientific landscape of ERC-funded projects in this panel



- *Geophysics, geodynamics, Tectonics, geomagnetism, Earth's mantle and crust evolution,* and *Natural hazards monitoring* grew in use from 2014 to 2020
- *Atmospheric science*, *Geochemistry, petrology*, *Tectonics, geomagnetism* and *Natural hazards monitoring* were used more in StG projects compared to those funded in CoG and AdG schemes, while *Geology in the critical zone* was used more in CoG projects and *Geophysics, geodynamics* was used more in AdG projects
- A high number of projects in this panel generate methodological developments. *Computational modelling* and *Experimental methods in earth system research* are the main ones

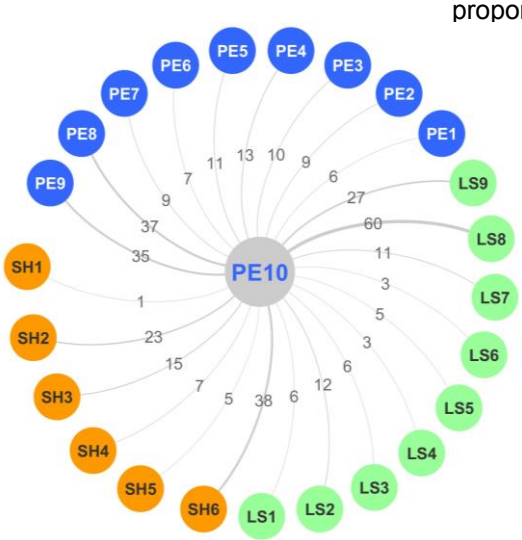
Connections between disciplines and topics in this panel

The strength of the connection between disciplines (blue) and topics (grey) is represented by the thickness of the arcs, which is proportional to the number of times they appear together

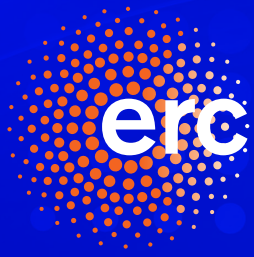


Synergies with other panels and domains

The strength of the connections is represented by the thickness of the arcs and the numbers indicated, which are proportional to the number of shared disciplines



- **PE domain**: the interaction is not very strong, but there are some connections with the Products and Processes Engineering (PE8), and Universe Sciences (PE9) panels
- **LS domain**: the interaction is not very strong, but there is some connection with the Ecology, Evolution and Environmental Biology (LS8) panel through the disciplines *Biogeoscience,* and *Palaeobiology and palaeoecology*
- **SH domain**: the interaction is not very strong, but there is some connection with The Study of the Human Past (SH6) panel through the discipline *Palaeobiology and palaeoecology*



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