

**ESF Research Networking Programmes – 2007 Call for Proposals –
Final list of all Proposals recommended by SCs for funding to MOs and planned launch in 2009**

Project Nr	Unit	Leading Unit	Project
1. 07-RNP-004	LESC	LESC	<p>European Research Network for Yeast Phenomics (EUROPHEN) Anders Blomberg (SE) <i>Keywords:</i> phenotype profiling; yeast strain collections; in vivo phenotyping; phenome bioinformatics; phenome</p> <p><u>Abstract:</u> Phenotypic analysis is central to concepts in evolution and in understanding disease. Genome-wide high-throughput screens for cellular traits on genetic strain collections is termed Phenomics. We here propose the formation of a European Research Network on Yeast Phenomics as an instrument to initiate collaboration in the development of high-throughput, high-resolution tools and approaches in yeast phenomics and to firmly established these in European. This highly multidisciplinary network with European experts from experimental and theoretical sciences, has the potential for high impact on the international arena. The network will also seek interaction with international phenomics initiatives, and has from the beginning important contacts with international experts. The network will financially support and organise workshops, summerschools/courses, databases, and conferences around four major Phenomics themes: i) construction of new yeast strain collections, e.g. “humanized yeast” and strains carrying combinations of genetic perturbations. This will also extend beyond the laboratory strains and include natural and industrial isolates, as well as non-cerevisiae yeast species, ii) high-throughput and high-resolution in vivo phenotyping including automation in both growth dynamics, spectroscopy and fluorescence microscopy, iii) database presentation, modelling and standardisation in phenome bioinformatics including how the phenotype data can be integrated world-wide and uniformly displayed and iv) phenome integration where genotype-phenotype information generated in yeast will be extended to other genetic model organisms, including studies on humans.</p> <p>The EUROPHEN project will exploit the excellent genetic characteristics of yeast and make important novel contributions to the way phenotypic features are experimentally generated in a truly high-throughput and high-resolution design. The generated data will also be integrated into ongoing systems biology initiatives to better describe the interrelationship between different genes and their respective role in the functional genetic networks. The propose yeast Phenomics network encompasses 25 European countries with roughly 70 researchers.</p>
2. 07-RNP-011	SCSS	SCSS	<p>Academic Patenting in Europe: Database sharing, applications and extensions (APE) Francesco Lissoni (IT) <i>Keywords:</i> university patenting; academic inventors; social networks; intellectual property rights (IPRs)</p> <p><u>Abstract:</u> The key aims of the project are the creation and diffusion of a harmonized database on academic patenting in Europe. Two related aims are the creation of an on-line system for updating the database through the collection of users' information, to be soon extended to a larger patent database containing information on all inventors, not just the academic ones; and the exploitation of the harmonized data through a number of jointly publications.</p> <p>The proposed network includes all European social scientists who have recently produced original data and studies on the patenting of inventions stemming from academic research. All of the databases produced by the included scientists share a common methodological trait, which is the choice of inventors (i.e. physical persons) as the observation unit. This choice is explained by the institutional features of European universities and related IPR laws, which grant scientists substantial freedom in allocating the property rights over their research results. The national studies produced so far prove that academic patenting in Europe is an extensive phenomenon, much more common than presumed by most policy-makers, and comparable to what is observed in the USA. Integration of the national databases is both feasible and desirable, and will allow for international comparative studies on the effects of new legal and policy instruments on technology transfer through patenting.</p> <p>The database will allow for the investigation of the economic returns of academic patenting at the scientist, university, and industry level. It will also help to investigate the extent of synergies and trade-offs between patenting and other technology transfer means such as consultancy, mobility of personnel, as well as teaching, conferencing, and publishing. Finally, it will provide the basis for the creation of a larger database on inventors in Europe, to be used in studies on knowledge diffusion and labour mobility.</p>

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3. 07-RNP-015	EMRC LESC	LESC	<p>The EuroGlycosciences Forum (Euroglycoscience) Sabine L. Flitsch (UK) <i>Keywords:</i> glycomics; glycobiology; structural medicine; systems biology</p> <p><u>Abstract:</u> Glycoscience is a term used to describe all the areas which relate to complex carbohydrates, their synthesis and biosynthesis, analysis, function and applications. Glycoscience is a rapidly expanding and exciting field that is relevant to many areas of chemistry, biology and medicine. A significant number of European laboratories are being considered to be at the forefront of current glycoscience research, and the current proposal aims to strengthen that position. Whilst important discoveries have been made in the individual disciplines of glycoscience, it is generally recognised that future successes will rely on large interdisciplinary consortia which have sufficient tools and resources to address the complex questions that lie ahead. From our current studies it is apparent that a true understanding of the role of glycosylation in complex biological systems will rely on close collaboration between physical scientists skilled in glycoscience technologies and scientist working in cell biology and medicine. The nuclei of such consortia have already formed in Europe and the current proposal is to foster such efforts and provide an umbrella organisation, the 'EuroGlycosciences Forum' that will establish a cohesive research landscape for glycoscientists on which to build future successes.</p> <p>The Euroglycosciences Forum will aim to provide convenient and active links between the leading research groups in the field through a series of meetings and workshops. It will also promote the establishment of key resources for glycoscientists, such as bioinformatics tools, microarray technologies, chemical synthesis of glycans, novel methods in structural analysis of carbohydrates, enzymology of proteins involved in glycan biosynthesis and metabolism, and molecular and cell biology of carbohydrate-binding proteins. Availability of these resources will ultimately lead to wider applications such as carbohydrate based therapeutics, diagnostics and materials both in academia and industry.</p>
4. 07-RNP-016	SCSS	SCSS	<p>African Borderlands Research Network (ABORNE) Gregor Dobler (CH) <i>Keywords:</i> Borderlands; Africa; Migration; Transnational relations; Trade</p> <p><u>Abstract:</u> ABORNE stands for empirical research that explores borderlands and cross-border phenomena in Africa. Its work is aimed at advancing theoretical academic debate as well as providing insights to inform policy. In a world where real life issues increasingly take on a transnational character which extends across territorial borders, research and policy decisions concerning Africa are often still stuck in national categories. Yet it is increasingly clear that this approach makes it impossible to effectively deal with some of the major challenges faced by African societies and their international partners in development co-operation: International migration, conflict and displacement, global pandemics like HIV/AIDS, regional economic integration and environmental hazards – to take only the most pressing examples – cannot be adequately understood or dealt with on a national level alone. ABORNE addresses these knowledge and policy gaps by bringing together specialists engaged in field research on critical cross-border issues in various parts of Africa, creating a forum for cutting edge research on cross-border phenomena at the regional as well as the continental level.</p> <p>Borderland are social spheres in which the limits of the national model become tangible, and a research perspective no longer contained within national boundaries can be developed and put to the test. ABORNE brings together established scholars with an international reputation in the field and doctoral students whose data is fresh from the field and whose analysis is on the cutting edge of transdisciplinary social sciences. Through researcher exchange, workshops, PhD seminars and joint publications, the network will develop a common theoretical perspective on African borderlands and communicate it to scholars, policy makers and students. It will thus contribute to an improved understanding of states and their borderlands in general and inform important policy decisions on the European level.</p>
5. 07-RNP-027	SCSS	SCSS	<p>European Social Cognition Network 2 (ESCON 2) Vincent Yzerbyt (BE) <i>Keywords:</i> Social cognition; attitudes; language; social psychology</p> <p><u>Abstract:</u> At the crossroads of cognitive and social sciences, social cognition is a 'hub' sub-discipline. More than ever, social cognition researchers need to intensify their efforts to gain a better understanding of social behaviour and find answers to the new challenges of our world. Given the complexity in the collection and analysis of the data and the level of information and skills needed to enrich social cognition knowledge with insights from neighbouring fields such as neurosciences, developmental psychology, behavioural economics, anthropology, linguistics, etc., social cognition can only hope to explore new scientific territories to the extent that it creates intensive collaboration between laboratories, generations, and disciplines. This program builds upon earlier efforts to create a platform that facilitates European research collaboration in the field of social cognition and leads to the formulation of cutting-edge collaborative European research programs. It capitalizes on and extends the</p>

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			<p>existing ESCON program.</p> <p>This proposal is being submitted with a view to further improve European scientific collaboration in social cognition by calling upon the expertise and knowledge of active European researchers on the frontiers of social cognition, and proposing an advanced European research training package in social cognition that gives young scholars the opportunity to learn about developments in the field often unavailable in their local institutions and to develop scientific networks early on in their careers. With its specific activities, ESCON has met with an enormously positive response, resulting in an unusually high level of networking, collaboration, and scientific progress. The message for the new program is that a key tool to improve the scientific environment offered to European researchers is to provide even more opportunities to directly 'exchange' and 'interact' among pairs as well as with experts. With this lesson in mind, the program proposes four types of activities to promote scientific collaboration and interaction.</p>
6. 07-RNP-029	LESC	LESC	<p>The Functionality of Iron Minerals in Environmental Processes (FIMIN) Stefan Peiffer (DE)</p> <p><i>Keywords:</i> biogeochemistry; iron minerals; environmental chemistry; geomicrobiology; contaminant degradation</p> <p><u>Abstract:</u> Iron minerals play a dominant role in a wide range of environmental processes, such as regulation of element cycles, contaminant degradation, and biotechnological applications. Our ability to understand these processes has grown significantly in the last years due to the development of powerful instrumental and analytical tools both in geochemistry and microbiology. However, application of this knowledge across disciplines is still at the beginning. In this Research Network Programme we therefore aim at making these techniques available to a larger number of young scientists from various disciplines based at European research institutes through a bundle of activities over a period of 48 months. These activities consist of travel grants for exchange visits to perform research in European laboratories, and of various training elements, such as laboratory courses and a summer school. Participation is based on a review process being handled by the Steering Committee. The organisation of the training elements is performed by European research groups that can apply for funding to the Steering Committee. The research network will be completed by a major international conference.</p>
7. 07-RNP-036	LESC	LESC	<p>Network for Integrated Assessment of the Dynamics of Mountain Catchments under Global Change (Net-DYNAMO) Martine Rebetez (CH)</p> <p><i>Keywords:</i> global change; integrated assessment; interdisciplinary research; adaptation strategies; catchment e</p> <p><u>Abstract:</u> This Research Network Programme will expand the capacity of European researchers to produce policy-relevant integrated assessments of socially-relevant variables under global change scenarios, yielding comparable outputs and promoting comparisons among catchments (100 to 10000 km²) that sample the diversity of European mountain environments. This RNP will focus on potential linkages between existing models and on translation of outputs into policy relevant terms. This RNP will will downscale existing scenarios to catchment scales, develop methodologies and compare results.</p> <p>Integrated assessments are critical if earth science is to inform decision-making under global change. Integrated assessment goes beyond describing past problems to provide detailed information about likely outcomes of different futures scenarios, including those characterized by adaptation proposals. Such assessments must achieve integration not just between scientific disciplines but also between science and governance. A principal way to achieve integration is to examine more closely the impact of global change at regional and local scales, and by developing methods that permit prevision of the impacts of not just global change but also proposed adaptation strategies.</p> <p>This RNP will conduct conferences and workshops, coupled with assessments in catchments throughout Europe funded by national or third-party sources. Stakeholders will play a key role by providing insights into the nature, scale and frequency of the assessment output variables. Workshops will develop one or more integrated assessment methodologies based on existing models and scenarios, and on cross-site analysis of results. The network includes scientists working across Europe, in adjacent countries, and on catchments in Africa, South America and North America. The network will strengthen European capacity to perform integrated assessment at policy relevant scales and provide continent-wide analyses of scenarios and adaptation proposals in sensitive mountain regions.</p>

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8.	07-RNP-049	LESC	LESC	<p>Tall Tower and Surface Research Network for Verification of Climate Relevant Emissions of Human Origin in Europe (TTORCH) Alexander Vermeulen (NL) <i>Keywords:</i> climate change; earth system observations; greenhouse gases; emission verification; inverse methods</p> <p><u>Abstract:</u> Observations of the long lived non-CO2 greenhouse gases and related tracers are an essential part of the Earth System Observation system. The combination of atmospheric observations and inverse atmospheric transport models will enable us to detect trends in concentrations and emissions, take up the challenge to validate the emission estimates of these gases of natural and antropogenic sources for large areas of Europe (independently checking the Kyoto protocol and beyond) and to test process based emission models.</p> <p>In TTORCH we will strengthen the further integration of the network of observatories of these gases and related tracers in Europe to an observational system of high consistency, quality and precision, while taking care of coordinating carefully with the developments in the ICOS project. Extension to the more Eastern part of Europe is needed. TTORCH will contribute by preparing and helping in building of the necessary infrastructure and will aid in the capacity building of (young) scientists in that part of Europe.</p> <p>TTORCH will provide the framework to continue the development and improvement of the network and prepare the extension to other parts of Europe. The TTORCH network will work as a basis for defining and building new projects, all in close contact with the ICOS infrastructure initiative.</p> <p>In TTORCH we will bring together the observed concentration data in a uniform database. We will organise 1-2 joint international workshops per year to bring together the participants including the observation and modelling communities from within and outside Europe. Exchange of young scientists and students between observation sites and modelling groups will be an important tool for capacity building. Another important task of TTORCH is the setup and implementation of joint papers with measurement and modelling work as well as communication with the general public on the need for and benefits of a ground based European greenhouse gas observing and emission verification system.</p> <p>Every two years the TTORCH network will organise a summer school on measurements techniques, the interpretation of data series, data selection and the use of data in mesoscale and long range transport modelling.</p>
9.	07-RNP-060	SCH	SCH	<p>Experimental Pragmatics In Europe (EURO-XPRAG) Ira Noveck (FR) <i>Keywords:</i> cognition; communication; inference; pragmatics; semantics</p> <p><u>Abstract:</u> For a long time, natural languages like English were viewed as codes that associate sounds with meanings: the speaker uses language to encode his message, and the hearer decodes it. Although this code model may work for much of animal communication, it cannot be readily applied to humans. We manage to communicate much more than we encode and decode because having language is just part of communication. The rest relies on inference.</p> <p>Once inference is recognized as central to communication, various questions arise. What kinds of inferences are involved in interpretation? Are inferences automatic or do they require effort? To what extent are they signalled by linguistic means, and to what extent do they depend on speakers' intentions, cognitive effort, and context?</p> <p>It seems obvious that the best way to investigate these issues is to bring together theoretical and experimental researchers in linguistics and psychology in order to better analyze communication and interpretation. In fact, this has been occurring over the course of the last 6 years or so as theories in semantics, pragmatics and cognition have been carefully investigated through experimental research.</p> <p>This has led to a European research program called Experimental Pragmatics. Numerous workshops, conferences and successful grant applications have demonstrated how fruitful the interaction between these approaches can be. The aim of the proposed Network programme is to provide a solid footing for this interdisciplinary approach in order to continue investigating cognitive aspects of language use.</p>

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1007-RNP-067	EMRC	EMRC	<p>European Network for the Study of Adrenal Tumors (ENSAT) Xavier Bertagna (FR) <i>Keywords:</i> adrenal tumors; European network; basic and clinical research</p> <p><u>Abstract:</u> Adrenal tumors generate two threats: -That associated with hormone hypersecretion, particularly hypertension in Conn's adenoma, pheochromocytoma, and cortisol secreting tumors (adrenal Cushing's). -That associated with the oncogenic potency of the tumor (malignant pheochromocytomas, adrenal cortical carcinomas). Adrenal tumors are rare, they can be sporadic, or occur in rare congenital or familial syndromes that have unraveled new molecular clues of tumor growth: -The cAMP pathway in adrenal cortical tumors: « illegitimate » expression of membrane receptors (in ACTH-Independent Macronodular Adrenocortical Hyperplasia or AIMAH), Gsa activating mutations (in the Mc Cune-Albright syndrome), PRKAR1A and/or PDE11A inactivating mutations (in the Carney complex). -The 11p15- (IGF2, H19, p57kip2) and 17p13 loci in malignant adrenal cortical tumors. -The Neurofibromine-, Elongin-, SDHs and RET genes in pheochromocytomas /paragangliomas of NF1, von Hippel-Lindau, familial paraganglioma syndromes and MEN2. Adrenal tumors are rare diseases. Yet, their study has the potential to reveal new molecular mechanisms of tumor growth, particularly in rare familial syndromes. Also, because they are rare, they cannot benefit from well controlled therapeutic trials with new drugs. To overpass these difficulties, our goal is to enforce a Network on Adrenal Tumors, at the European level, after we had shown that it was possible and highly efficient at the National level: The French National Network (COMETE), will merge its forces with the Italian and German Networks (NISGAT and GANIMED), also dedicated to the study of Adrenal Tumors, and will enroll other teams from other European countries.</p>
1107-RNP-078	SCH	SCH	<p>Comparative Oriental Manuscript Studies (COMSt) Siegbert Uhlig (DE) <i>Keywords:</i> Oriental studies;manuscript studies;text criticism;digital philology;cultural heritage preservation</p> <p><u>Abstract:</u> The program aims at facilitating cross-cultural academic dialogue and active exchange in the field of Oriental manuscript studies with the focus on the Mediterranean and North African cultural areas. So far no such exchange has been conducted systematically on a European level, having become an urgent desideratum. Standards in all subfields of manuscript studies differ from one study area to another and from one national scholarly tradition to another. Oriental studies are considerably behind Occidental manuscript studies, where, e.g., Greek and Latin philology have reached a high standard. Since some regional and linguistic cultures have been studied more intensively than the others in different aspects, an exchange within the framework of Oriental philology will give possibility for Europe-wide development through network activities. The co-ordination will on the one hand enable a high degree of standardization between the cultural and language areas and on the other hand facilitate the explication of culture-specific methodologies. In some areas, already advanced in classical and medieval European philology, such as, e.g., digital philology including digitisation of manuscripts and computer-supported text-editorial practices, Oriental studies are still at the very beginning. The joint European efforts will lead to a breakthrough in the field. Not only specialists working in different cultural fields but also those dealing with different subdisciplines of manuscript studies will combine their expertise working in five internationally composed research teams (codicology and palaeography, philology/text criticism, digital philology, cataloguing, manuscript preservation). In a series of workshops, meetings and conferences, common approaches will be achieved that will serve as standard for contemporary and future Orientalists and manuscript scholars. Relevant by-products of the RNP will include a series of publications, digital databases and a textbook in Oriental manuscript studies. The aims set can only be achieved through a Europe-wide co-operation.</p>

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1207-RNP-083	EMRC	EMRC	<p>The Identification of Novel Genes and Biomarkers for Systemic Lupus Erythematosus (BIOLUPUS) Marta E. Alarcón-Riquelme (SE) <i>Keywords:</i> Systemic lupus erythematosus; autoimmunity;genome-wide association scan; biomarkers; BILAG</p> <p><u>Abstract:</u> Systemic lupus erythematosus (SLE) is a chronic inflammatory disease considered a prototype of autoimmune disease and inflammation. Without effective therapy SLE causes serious morbidity in about 1 in 2000 women aged between 20 and 50 years of age and considerable socioeconomic burden on European society. There is strong evidence that genetic factors play a role in SLE. Genes identified in SLE are shared with other inflammatory and autoimmune diseases and we pursue the identification of lupus genes to understand disease pathogenesis and find novel biomarkers. For lupus, there are two potential biologic drugs, Rituximab (anti-CD20) and anti-CD22. However, as reliable biomarkers are not available, drug approval agencies are unable to assess their real efficacy. Biomarkers cannot be identified without the use of powerful and complete databases and clinical multicenter collaborations. BIOLUPUS group has as long-term objective to apply genomics, proteomics and the use of translational databases to the identification of biomarkers of clinical utility. Thirty-five participants from 13 European countries are involved in this enterprise involving clinicians, immunologists and geneticists. The main concrete objectives proposed are: a) Coordinate a centralized European database for SLE; b) The construction of a website for BIOLUPUS with information on its functioning, objectives and communication between and among participating groups; and c) the organization of meetings and courses involving clinical assessment tools, database use, a major conference in SLE genetics and mobility of clinicians and PhD students within the network, in order to advance swiftly with the work involving new genes and biomarkers. This network will be of outmost importance for the advancement of lupus research in Europe.</p>
1307-RNP-100	PESC	PESC	<p>Exploring the Physics of Small Devices (EPSD) Christian Van Den Broeck (BE) <i>Keywords:</i> Nonequilibrium nanodevices;stochastic thermodynamics;control and efficiency;molecular engines</p> <p><u>Abstract:</u> Our network joins leading European laboratories at the forefront of experimental studies of small physical, biophysical and chemical devices, to the theoretical groups that have pioneered recent spectacular advances in the nonequilibrium physics of small systems. Such a unique cross-disciplinary network will push forward the integration between theory, experiment and application, allow to solve technical problems specific for the small scale and inspire new methods of design, manipulation and operation. We will further develop and apply the thermodynamics and statistical mechanics of small nonequilibrium devices, evaluate the role of stochasticity and nonlinearity and the implementation of optimization techniques, and develop new calculational approaches for small driven systems. Important inspiration will also be drawn from the incorporation of groups working on the physical understanding of biological machines like molecular motors and other "devices" operating in the cell and their corresponding biotechnological applications. The implications of these new theoretical and conceptual perspectives will be confronted with the practical and technological issues posed by the design and construction of small scale devices, in synergy with the participating research laboratories working on nanoelectronics, nanorefrigeration, supra-molecular devices, catalytic devices, biotechnology of the cell, micro-fluidics and micro-arrays. We will also devote special attention to expertise-broadening training of young scientists.</p>
1407-RNP-105	PESC	PESC	<p>Interactions of Low-Dimensional Topology and Geometry with Mathematical Physics (ITGP) Jorgen Andersen (DK) <i>Keywords:</i> Low-dimensional Geometry and Topology;Gauge theory;Quantum Topology;Symplectic Geometry</p> <p><u>Abstract:</u> The goal of this network is to facilitate, stimulate, and further promote the many interactions of low-dimensional topology and geometry with various fields including (in no particular order) gauge theory, quantum topology, symplectic topology and geometry, Teichmüller theory, hyperbolic geometry, string theory and quantum field theory. The network is intended to be organized on a European wide scale, reflecting the global nature of the ongoing research in these areas. The planned activities of workshops and conferences, schools and programmes of research visits will reach across international and disciplinary lines to stimulate current and future progress. At the same time, this network will bring together leading experts in the above-mentioned areas with a new generation of researchers, providing them with the interdisciplinary perspective and training which will plant seeds for the breakthroughs of the future.</p>

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1507-RNP-107	PESC	PESC	<p>Large Hadron Collider and Cosmology (LHCC) Jan Kalinowski (PL) <i>Keywords:</i> Large Hadron Collider;Cosmology;Dark Matter;Standard Model;Terascale Standard Model</p> <p><u>Abstract:</u> Particle Physics is at a crossroads, with the possible ways forward categorized as Standard Model (including gauge and particle extensions), Supersymmetry, Extra Dimensions or Something Else. Each of these will have implications for the problem of Dark Matter in the Universe. The Large Hadron Collider (LHC), the major European experimental effort in particle physics, is poised to reveal which of these directions is chosen by Nature. This effort should be matched by a similar effort in theoretical research in Europe directed towards the interpretation of the LHC and the dark matter search experiments in the form of a new Terascale Standard Model (TSM). The construction of TSM and investigations of its implications for the fundamental questions of particle physics and cosmology forms the central focus of this programme proposal.</p> <p>The programme comprises most of the major European expertise in the area of LHC physics and Dark Matter. It involves experts in all the above theoretical possibilities for the new Terascale Physics, including architects of many of the major experimental tools which will be used in LHC analyses, as well as the model building ideas that will be explored. Formal links provided by the present proposal would enable the existing scientific contacts to flourish and grow in the timely period of LHC switch-on when such collective expertise would benefit the community the most. This would enable the assembled expertise to make effective and coherent world class contributions to Particle Physics, and to play a leading role in establishing the new TSM and elucidate the nature of Dark Matter.</p> <p>The planned activities are workshops and research visits. These are designed to increase the level of interaction between existing research groups and to give a broad education in all the approaches to a new generation of young researchers.</p>
1607-RNP-114	PESC SCH	SCH	<p>New Frontiers of Infinity: Mathematical, Philosophical and Computational Prospects (INFTY) Joan Bagaria (ES) <i>Keywords:</i> Infinity;set theory;philosophy of mathematics;computation</p> <p><u>Abstract:</u> Human beings have been always fascinated by infinity. From ancient Greece, philosophers and mathematicians have studied its nature and been bewildered by the paradoxes that defy its rational comprehension. In medieval times, infinity was thought of as the ultimate attribute of God, and as such totally unassailable to humans. But a new mathematical theory of the infinite, the calculus of Leibniz and Newton, was precisely what made possible the birth of modern science. Mathematical Analysis, a symphony of the infinite according to Hilbert, was at the heart of critical developments in Physics during the nineteenth century, and up to the present day. At the turn of the twentieth century, following the dramatic discoveries of Cantor on transfinite numbers -- the first true investigation of the infinite realm -- it became possible, and necessary, to establish a purely mathematical theory of infinity. This was achieved by Zermelo, Fraenkel, Gödel, von Neumann, and others, culminating in the current ZFC system of modern set theory. As an extremely general theory, whose objects of study are the abstract infinite sets, ZFC serves as the standard foundation of mathematics, and therefore has great significance for all of science. Set-theoretical research has been a continuous source of original ideas and results, as well as of deep and highly technical tools that are now finding applications in many areas of mathematics, computation, and even natural and social sciences. This is the golden age of set theory. Major breakthroughs have been made recently and new ones are expected. The main objective of the Programme is to stimulate the exchange of ideas among researchers pursuing different approaches to infinity: mathematical, philosophical, and computational. Its aim is to promote cooperation at European and international levels, scientific mobility and integration of national activities and groups with complementary backgrounds and expertise, and training of young researchers.</p>
1707-RNP-118	PESC	PESC	<p>Quantum Spin Coherence and electronics (QSpICE) Bjorn Trauzettel (DE) <i>Keywords:</i> electron spin;quantum coherence;quantum dots;carbon nanotubes;nanomagnetism</p> <p><u>Abstract:</u> A physical realisation of quantum information processing requires the use of technologies resting on coherent quantum transport and correlation phenomena. Due to the relatively weak coupling of spin with electric fluctuations of the environment, the spin degree of freedom appears as an ideal candidate for quantum information applications. With QspiCE, we plan to investigate quantum spin-dependent effects and transport in nanoscale structures such as semiconducting nanowires, carbon nanotubes, quantum dots, and graphene nanoribbons. QspiCE aims at improving the manipulation and the control of the electron or hole spin in nanostructures and at analyzing and harnessing the various mechanisms leading to relaxation and decoherence of spin in nanoscale objects. QspiCE should help to strengthen the networking between the leading European groups in the field and, thus, increase their influence in this important and popular field of modern condensed matter physics.</p>

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	1807-RNP-119	PESC	PESC	<p>Research Links to Explore Heat Transfer for Saving Energy (RELTRANS) Alina Adriana Minea (RO) <i>Keywords:</i> heat transfer;industrial equipments;energy consumption;nanofluids;microchannels <u>Abstract:</u> Recent European discoveries in heat transfer have stimulated the study of air – gases circulation in heating equipments. The Network’s workshops enable researchers from many laboratories, East and West, to achieve fruitful collaboration. The goal of this network is to facilitate interdisciplinary exchange of ideas and interaction on heat transfer processes evolution in a broad sense. In general, the focus of interest will be on guiding principles of, and better tools for finding new methods to increase heat transfer process in industrial equipments. The goal will be to suitably link theory-based and experimental approaches, to enhance mutual exchange of ideas and to foster collaborative research amongst the leading European groups. The topics will naturally include the use of mathematics as a foundation for optimize the functioning regime of industrial equipments, in order to minimize the energy consumptions. The main focus of the network will be the exploration of ways to evaluate and combine a wide variety of different techniques, formalisms and processes to ease heat transfer problems evolution. The goal is to identify a set of approaches that cover as many aspects of equipments optimization as possible.</p> <p>Heat transfer techniques are among the most powerful and versatile tools with applications in many different fields. Their wide range of applications stimulates a great deal of cross-disciplinarity and the history of their continuous advances parallels that of their diverse fields of application. The proposal contains instruments to enhance interdisciplinarity and the discovery of new fields at the frontiers between different disciplines as well as training activities aiming at ensuring an optimal transfer of the knowledge down to the student level and across the national boundaries.</p> <p>Strengthening RELTRANS as the meeting point for all flavors of heat transfer in Europe will undoubtedly increase the European competitiveness across many fields of physics and engineering.</p>
	1907-RNP-128	PESC	PESC	<p>Super-intense laser-matter interactions (SILMI) Charles J. Joachain (BE) <i>Keywords:</i> Super-intense lasers;Attophysics;Multiphoton processes;Laser-plasma interactions <u>Abstract:</u> The availability of super-intense laser pulses and the planned development of new large-scale and medium-size facilities dedicated to the generation of laser light with unprecedented capabilities calls for a vigorous effort to study laser-matter interactions in the ultra-high intensity regime. Europe is at the forefront of the scientific and technological advances in this fast-growing and highly competitive domain at the frontier of Physics, thanks to its strong commitment in the implementation of new sources of super-intense laser radiation. Foremost among the projects relevant to this field are ELI (Extreme Light Infrastructure), HiPER (High Power laser Energy Research facility) and FLASH (Free-electron LASer in Hamburg). Other medium-size facilities delivering intense and ultra-short (femtosecond) pulses of infra-red coherent radiation, which are grouped in the Laserlab-Europe consortium, are also available. In addition, Europe plays a leading role in the development of sources of high-order harmonics, which deliver pulses of ultra-violet radiation with durations in the attosecond range. This proposal requests support for a combined effort of leading European research groups to investigate fundamental processes and applications in super-intense laser-matter interactions, ranging from ultra-fast phenomena on the attosecond scale to ultra-strong interactions of matter with petawatt pulses. The SILMI network represents an invaluable opportunity to allow European scientists to discuss new trends in the field, encompassing theory, experiments and applications. The network will orient research efforts, coordinate their implementation and promote the transfer of knowledge between the participating groups. It will also allow young European scientists to broaden their training and increase their professional skills by interacting with first-rank scientists in an international environment and in a rapidly expanding ara of science and technology.</p>