BIENVENUE

INTERESTS FOR SUPERVISION

Interest #	Research field
1	**Sociology of education**
2	**Biomechanics and ergonomics**
3	**Linguistics, Langage teaching**
4	**Dynamical systems**
5	**Environment and Geosciences (ENV)**
6	**mechanics of materials**
7	**Stochastic geometric numerical integration**
8	**Agricultural soil quality**
9	**Landscape agroecology**
10	**Digital Humanities**
11	**Food Science**
12	**Molecular chemistry**
13	**Green Vehicle Routing Problems with Time Windows.**
14	**hematology, genetics**

15	**Numerical modeling of fused granulate fabrication process for digital twin applications**
16	**Advanced constitutive equation for fiber-filled fluids**
17	**Coordination Chemistry / Inorganic Chemistry**
18	**Fluid Dynamics**
19	**Trustworthy Multimodal and Longitudinal AI for Medical Imaging and Precision Medecine**
20	**Concentration, drying and rehydration of dairy products**
21	**Digital Assessment of Movement and Non-Movement Behaviours Using Wearables for Health Research**
22	**Wireless communication systems**
23	**Artificial Intelligence, Neuro-Symbolic AI, AI-Driven Software Engineering, Web Technologies, and Intelligent Systems Engineering**
24	**Molecular Biology**
25	**Marine Microbiology**
26	**Lipid chemistry for nucleic acids delivery**
27	**Robotics - Control&Guidance**
28	**Energy**
29	**Mechanical Engineering – Solid Mechanics of Multi-Material Assemblies (adhesive bonding, hybrid joining)**
30	**Elucidating important reaction mechanisms in catalytic chemistry by using mass spectrometry and molecular modeling.**

31	**International law**
32	**Microarchitectural Side- and Covert-Channel Attacks**
33	**Food microbiology**
34	**Molecular chemistry**
35	**Clinical Psychology, Psychopathology, Psychoanalytic Clinical Practice : Clinical Work with Children, Adolescents and Adults. Autism. Affinity-Based Therapy. Art and Creative Processes**
36	**Clinical Psychology, Psychopathology, Psychoanalytic Clinical Practice : Contemporary Discourses and Symptoms. Current Issues in Psychological Distress**

Interest 1	Sociology of education		
Keywords	*European Higher Education Area; European Student Mobility; Equality of access*		
Laboratory	**CREAD**	**Host Institution**	**Université Rennes 2**
Description	The postdoctoral researcher will work within the project STIMEHE (Students' inclusion and mobility in European higher education). It focuses on the Europeanisation of universities through the prism of student mobility. Despite the Bologna Process setting the target of 20 % of students participating in mobility programmes by 2020, figures show, on the one hand, an average rate well below this target (8.4 per cent for the European Higher Education Area in 2021) and, on the other hand, significant disparities between states, universities and students. The case of student mobility provides an opportunity to analyse two phenomena: • Persistent inequalities between students, against a backdrop of massified access to higher education; • The transformation of universities as a result of the guidelines issued by European bodies. These transformations are reflected in the work carried out by actors on the ground. The project is conducted on national and European levels. In France, the project began with a qualitative study: a literature review and semi-structured interviews with staff from the Universities of Rennes 2 and Nantes. It will continue in September 2026 with a quantitative survey at four universities. A questionnaire-based survey will be carried out amongst students at these universities to explore their student experience. The existing team is responsible for this French component. At the European level, the aim is to carry out the same research using a mixed-methods approach. The literature review has been underway since the beginning of 2026 and exploratory interviews have been conducted with colleagues from the University of Flensburg, Germany. However, the bulk of the research remains to be carried out. This will involve distributing a questionnaire to students regarding their experiences of European mobility and conducting interviews with those involved in European student mobility. This will be the postdoctoral researcher's work, in collaboration with the project leader.		
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Interest 2	Biomechanics and ergonomics

Keywords	*on-body sensors, biofeedback, human-exoskeleton interaction, virtual reality*		
Laboratory	**M2S**	**Host Institution**	**Université Rennes 2**
Description	My current research works are dedicated to: (i) the estimation of the risk of injury in running through an instrumented track and a markerless system, (ii) the transferability of a perceptual motor skills test (reactive agility) in rugby and soccer, (iii) the impact of a virtual simulator for the training in sport and industrial situation and, (iv) the design of an active exoskeleton for rehabilitation applications.		
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Interest 3	**Linguistics, Langage teaching**		
Keywords	*barriers to thought, french grammar, verb, collaborativ research, LexiCOmut*		
Laboratory	**CELLAM**	**Host Institution**	**Université Rennes 2**
Description	I am conducting a long-term collaborative research project in two schools in Rennes: one with pupils from a privileged background, the other from a very disadvantaged background. In this research, I am exploring the possibility of teaching the French language in a way that takes into account barriers to understanding, in a similar manner to approaches developed in science or mathematics. This exploration involves both collaboration with teachers and the scientific insights that can be drawn from various linguistic frameworks, with a particular focus on Mediation Theory (Gagnepain) This research is both qualitative (observations, interviews, meetings) and quantitative (test statistics).		
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Interest 4	Dynamical systems		
Keywords	*differential equations, algebraic geometry, symbolic computation*		
Laboratory	**IRMAR**	**Host Institution**	**INRIA**
Description	Some dynamical systems converge towards a periodic solution, so called limit cycles, as time evolves forward. Counting such cycles, let alone isolating or describing them, remains an active research area since the early twentieth century even for seemingly simple planar systems. We intend to investigate novel computational-based techniques to gain insights and advance our understanding of how and when such cycles occur based on the implicit description of the flow as a differential equation.		
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Interest 5	Environment and Geosciences (ENV)		
Keywords	*Geology, Hydrology, Biology, Geochemistry, Remote Sensing, Geophysics*		
Laboratory	**Geo-Ocean**	**Host Institution**	**UBS**
Description	The effects on coastal contamination and eutrophication are complex and unpredictable as they highly vary depending on the location due to the high variability of geological settings and associated landscapes and subsurface morpho-structures. Part of this complexity could be explained by the cascade of indirect impacts that occur along the land–ocean continuum and affect the water and sediment fluxes occurring at different timescale, which is rarely accounted for. In Brittany, where the majority of aquifers are situated in fractured rocks, it is essential to integrate regional basement structures into the hydrogeological system. Groundwater plays a significant role in chemical storage and leakage into other conduits and reservoirs. For instance, recent research suggests that the largest green tides in the East China Sea were linked to significant submarine groundwater discharge (SGD) rather than excess pollutants in low-flow surface waters, emphasizing the need to consider such implications in models of biogeochemical and ecological systems. The manner in which fluids migrate through non-porous media, their time residency in various reservoirs, and their resilience to climate-change pressures		

	are all topics that remain controversial, requiring the integration of multiple datasets (geophysics, geochemistry, structural geology, etc.). The key questions related to the MAPCOAST project are: - How and where do nutrients reach the coast? - What is the spatio-temporal variability of nutrient input? - How do changes in boundary conditions, including rising sea surface temperature, affect the system? Utilizing a multidisciplinary approach, the postdoc could integrate geophysics (Seismic Reflection, Thermal Imaging, Conductivity) and geochemistry (physicochemical properties, concentration and loads of dissolved nutrients of underground, coastal waters and pollutants/nutrients stored in sediments) datasets to understand fluid circulation and migration through non-porous media under climate-change pressures.
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Interest 6	**mechanics of materials**		
Keywords	*deployable structure, 4D printing, fibre reinforced composite*		
Laboratory	**IRDL**	**Host Institution**	**UBS**
Description	The research within Bionics group is focused on autonomous shape changing of fibre reinforced composite materials triggered by environmental change like temperature and moisture. We target either biological abstration of original mechanism from living organisms to novel shape changing materials. Development of numerical simulation and inverse design framework to solve geometry/material distribution is also of importance.		
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Interest 7	**Stochastic geometric numerical integration**

Keywords	*stochastic numerics, geometric numerical integration, manifolds, Lie-group methods, Hopf algebra, Butcher series, ergodicity, multiscale*		
Laboratory	**IRMAR**	**Host Institution**	**INRIA**
Description	My research revolves around the design of new efficient methods for solving deterministic and stochastic differential equations on Euclidean spaces or on manifolds, and on the development of the algebraic and geometric foundations of stochastic geometric numerical integration. The problems I study are motivated by numerics, but often rely on advanced algebraic, geometric, and analysis tools, including Butcher series, Hopf algebras and algebroids, pre/post-Lie algebras, multiscale analysis, stochastic analysis, and differential geometry. This research field is best for someone with a broad set of mathematical skills who has an interest in developing new objects from pure mathematics and to apply them for the development of numerical analysis. The new integrators also have to be communicated to applied mathematicians through interdisciplinary collaborations and the implementation of open-source software.		
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Interest 8	**Agricultural soil quality**		
Keywords	*Soil quality indicators, decision support tool, spectral analysis, machine learning*		
Laboratory	**SAS**	**Host Institution**	**INRAE/INSTITUT AGRO**
Description	Preserving the quality of agricultural soils remains a major challenge in the context of agroecological transition and reduced reliance on inputs. The goal, therefore, is to ensure that soils function properly, particularly with regard to the supply and regulatory services they must provide. To achieve this, we need to develop decision-support tools so that land managers can adopt practices that help maintain or improve soil health. Numerous soil quality indicators are available, but they can still be difficult to obtain. Analytical protocols are costly and time-consuming. Interpretation frameworks are still insufficiently developed, and when they do exist, they are subject to significant uncertainty. One solution is the development of accurate prediction tools—combined with interpretation grids—for these indicators, provided that these tools are based on data collection methods that are easy to implement, rapid, inexpensive, and non-destructive. Among these soil quality indicators, soil structural stability is an indicator of the risk of erosion and runoff. Indeed, in Brittany, soils are predominantly loamy and compacted.		

	The goal of this project is to develop a model for predicting the structural stability of soils, based on data already collected by the partners and new data to be collected from plot networks and experimental setups. To achieve this objective, we propose combining machine learning approaches with spectral analysis in the visible and near-infrared ranges. To build the model, several simplexes obtained from the same soil samples will be considered as well as standardized information on agricultural practices to describe their degree of intensification. It will also be necessary to propose performance criteria to validate the proposed models. The sub-objectives focus on the methodological development of such an approach, the establishment of critical values, and the development of a protocol for verifying data quality. The ultimate goal is to propose a set of recommendations.
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Interest 9	**Landscape agroecology**		
Keywords	*agroecology, landscape ecology, community ecology, spatio-temporal patterns, long term surveys, field margin, hedgerow, vegetation, multifunctionality*		
Laboratory	**BAGAP**	**Host Institution**	**INRAE**
Description	My research aims to identify the conditions necessary for maintaining biodiversity and associated multifunctionality in agricultural landscapes. I'm thus interested in the relationships between biodiversity/multifunctionality, agriculture and landscape context, across space (from local to landscape scales) and time (from one year to decades). The applied goal of my research is to generate knowledge about the trajectories of biodiversity change in response to landscape transformations and shifts in agricultural management practices, in order to identify levers for action to make agroecosystems more sustainable. My research is mainly based on field observations and farmers' surveys from the Zone Atelier Armorique, a long-term socio ecological research site.		
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Interest 10	Digital Humanities		
Keywords	*humanities, art, digital, AI*		
Laboratory	**HCTI**	**Host Institution**	**UBS**
Description	AI and Book History: come join leading projects in book history and data visualisation. Interest also in scholarly digital publishing.		
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Interest 11	Food science		
Keywords	*protein, functional properties (foaming,gelling), structure-function*		
Laboratory	**STLO**	**Host Institution**	**Institut Agro**
Description	To meet the increasing demand for protein and environment sustainability, there is a necessity to support protein transition by expanding the range of plant-based protein products. Foams are particularly challenging applications as they required protein with high solubility, fast diffusion towards the interface, flexibility and interactions ability. Moreover, plant protein ingredients often contain traces of fat and/or polysaccharides that impact their interfacial behavior and thus their foaming properties. A first project performed in the lab identified at least 3 interesting plant protein ingredients as egg white replacer in foams. The aim of the postdoc study would be to further understand the interfacial behavior of these plant proteins in relation with their molecular state and especially their aggregation level, as a function of physicochemical and processing conditions and to rely it to macroscopic characterization of foams such as foaming capacity, foam stability and foam texture. The digestibility of foams obtained will also be considered.		

	The mix research unit Science and Technology of Milk and Eggs has a high experience in the study of milk and egg protein functionalities. For nearly 10 years now, the researchers also included plant proteins in their subject areas and wished to transfer their expertise acquired on animal proteins to plant proteins. Especially, the group process-structure-functionality (PSF) explores the main molecular and supramolecular mechanisms behind the macroscopic behavior of food proteins such as foams. The post-doc candidate will be welcome in this research group but when considering the digestibility of plant protein foams, the post-doc candidate will be supported by technicians and researchers of the Bioactivity and Nutrition group.
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Interest 12	**Molecular chemistry**		
Keywords	*Methodology in main-group chemistry - Silicon heterocycles - Hydroboration reactions - Organoaluminum derivatives - Main-group polymers - Methodology in main-group chemistry*		
Laboratory	**ISCR**	**Host Institution**	**Université de Rennes**
Description	The chemistry we are developping in the group focuses primarily on methodological aspects of main-group chemistry (B, Al, Si mainly) with the objective to achieve different chemical reactions and create new molecular compounds as well as polymers. Our research topics include for instance hydroboration reactions and chemistry of aminoborylcarbene (B), carboalumination reactions and study of highly reactive organoalanes (Al) and chemistry of tight silicon heterocycles (Si). From a technical point of view, the savoir-faire of the team includes the handling of sensitive species and their characterization by multinuclear NMR spectroscopy, SC-XRD analysis as well as theoretical methods, mainly. To sum-up, we are chemist with a taste for fundamental chemistry. The understanding of chemical reactions as well as compound's solution-behaviour and structure is our daily quest.		

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Interest 13	**Green Vehicle Routing Problems with Time Windows.**		
Keywords	*VRPTW, Routing, Operations Research*		
Laboratory	**Lab-STICC**	**Host Institution**	**UBS**
Description	We are looking for a postdoc to work on routing problems, ideally VRPTW. A particular case to be considered is around the resolution of real case instances.		
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Interest 14	**hematology, genetics**		
Keywords	*leukemia, myelodysplastic neoplasm, patient samples, lenalidomide, translational research*		
Laboratory	**INSERM**	**Host Institution**	**UBO**
Description	Our team has been studying leukemias (AML) and myelodysplastic syndromes (MDS) for over 20 years. Our team is a scientific research and a hospital genetics laboratory. We are exploring: - Pathological consequences of genetic and chromosomal abnormalities (e.g., del 5q, del 7q) on the development of AML and MDS - Treatment resistance due to genetic abnormalities and (e.g., lenalidomide) - Alterations in topologically associated domains (long-range cis interactions within chromosomes) - Prognostic factors associated with alterations identified by optical genome mapping (OGM)		

	Techniques used: Single-cell RNA-seq, Hi-C, cytometry, CUTandRun, RNA-seq, eCLIP, basic cell , OGM, whole genome sequencing, biology,... Our study models: patient cohorts , patient samples, normal CD34+ cells, cell lines…
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Interest 15	**Numerical modeling of fused granulate fabrication process for digital twin applications**		
Keywords	*Additive manufacturing, fused granulate fabrication (FGF), digital twin, CFD, multiphysics numerical simulation*		
Laboratory	**IRDL / ComposiTic**	**Host Institution**	**UBS**
Description	The fused granulate fabrication (FGF) process addresses environmental challenges by enabling precise dosing of thermoplastics and any custom fillers directly in the extrusion head. This process also represents a step toward large-scale additive manufacturing (LSAM), which is attracting strong interest from composite and mold-making industries as a means of producing more sustainable and recyclable molds. A digital twin of this unique robotic 3D-printing platform is currently under development and presents significant research potential. The 3D-printing platform features end-to-end digital continuity with feedback, high-performance data captures under elevated temperatures, and spatial data mapping. However, an important challenge remains achieving fine real-time representation in areas where no data capture is available. Numerical simulations help bridge this gap by providing predictive data. We are seeking candidates who are studying or have a strong interest in modeling the FGF process to describe the key phenomena, including bead size, coalescence, thermal fields, adhesion, consolidation, and more. The work involves studying a complex multiphysics problem that includes fluid mechanics, heat transfer, nonlinear and temperature-dependent rheological laws, and other physics (e.g., filler orientation, crystallization, consolidation…). References: - “A smoothed particle hydrodynamics study of a non-isothermal and thermally anisotropic fused deposition modeling process for a fiber-filled composite”, Z.		

	Ouyang, E. Bertevas, D. Wang, B.C. Khoo, J. Férec, G. Ausias, N. Phan-Thien, Physics of Fluids, 32, 053106, 2020. https://doi.org/10.1063/5.0004527 - "Orientation predictions of fibers within 3D printed strand in material extrusion of polymer composites", N. N. Kermani, S.G. Advani, J. Férec, Additive Manufacturing, 77, 103781, 2023. https://doi.org/10.1016/j.addma.2023.103781
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Interest 16	**Advanced constitutive equation for fiber-filled fluids**		
Keywords	*rheology, fiber suspension, model, CFD, active particles*		
Laboratory	**IRDL**	**Host Institution**	**UBS**
Description	Our research focuses on understanding the behavior of fiber suspensions. The flow characteristics of these suspensions play a crucial role in many processes, as they determine the uniformity of fiber distribution during processing, and consequently influence the final material properties. To optimize such processes, a comprehensive understanding of suspension flow is required at multiple scales: the suspension as a whole, the fiber network, and individual fibers. When combined with CFD simulations, this knowledge provides an efficient and powerful design methodology. Our research group welcomes candidates who study or are interested in modeling the behavior of fiber suspensions. This may involve a wide range of topics and challenges, such as accounting for the non-Newtonian behavior of the suspending matrix, fiber-fiber interactions, fiber migration, or fiber flexibility, and can even extend to active particle systems. References: - "Rheological Modeling of Non-dilute Rod Suspensions", J. Férec, G. Ausias, Rheology of Non-Spherical Particle Suspensions, Edited by F. Chinesta and G. Ausias, Wiley – ISTE, 2015. https://doi.org/10.1016/B978-1-78548-036-2.50004-6		

	- “Short fiber composite reinforcements”, J. Férec, P. Laure, L. Rocha-da-Silva, M. Vincent, Composite Reinforcements for Optimum Performance, Edited by P. Boisse, Woodhead Publishing, 2021. https://doi.org/10.1016/B978-0-12-819005-0.00020-4 - “Macroscopic modelling of the evolution of fibre orientation during flow” J. Férec, E. Bertevas, G. Ausias, N. Phan-Thien, Flow-Induced Alignment in Composite Materials, Edited by T.D. Papthanasiou, 2nd Edition, Woodhead Publishing Series In Composites Science And Engineering, 2022. https://doi.org/10.1016/B978-0-12-818574-2.00002-6 - Orientation de fibres discontinues dans la mise en forme de pièces en thermoplastiques. Techniques de l'Ingénieur, 2025, pp.AM3729 V2. ⟨10.51257/a-v2-am3729⟩ [in French]
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Interest 17	**Coordination Chemistry / Inorganic Chemistry**		
Keywords	*Rare-earth elements, magnetism, luminescence, molecules, surface deposition*		
Laboratory	**ISCR**	**Host Institution**	**INSA Rennes**
Description	We explore the frontiers of coordination chemistry to design innovative molecular and hybrid materials. Our research focuses on lanthanide-based systems, radical ligands and coordination polymers, engineered to create next-generation magnetic and luminescent materials with high-impact applications such as advanced lighting & optical devices or high-density magnetic data storage We combine molecular design, structural chemistry, and multifunctional property engineering to push the limits of quantum & spin-based functionalities. Our Expertise & Research Areas are: -Lanthanide Coordination Chemistry -Molecular Magnetism & Single-Molecule Magnets -Luminescence & Energy-conversion materials -Radical ligands -Coordination polymers -Hybrid & surface-supported molecular materials		
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Interest 18	Fluid Dynamics		
Keywords	*aero/hydrofoils, transition, separation*		
Laboratory	**IRENAV**	**Host Institution**	**Ecole Navale**
Description	The Institute for Naval Research and Studies (IRENav) is a multidisciplinary research laboratory established in 2000 under the joint supervision of the French Naval Academy and the École Nationale Supérieure des Arts et Métiers; it holds "Équipe d'Accueil" (EA3634) status and is designated as a Carnot Institute within the CARNOT ARTS framework. The laboratory conducts upstream and applied research on naval systems, aligned with the needs of the French Navy. Its work is carried out in the fields of engineering science and technology, leveraging high-value-added technological platforms.		
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Interest 19	Trustworthy Multimodal and Longitudinal AI for Medical Imaging and Precision Medecine		
Keywords	*Trustworthy AI; Multimodal Learning; Longitudinal Modeling; Digital Twins, World Models, Medical Imaging; Ophthalmology; Foundation Models; Computer Vision; Disease Progression; Clinical Prediction*		
Laboratory	**LATIM**	**Host Institution**	**UBO**
Description	Our research focuses on trustworthy AI for healthcare, with particular emphasis on multimodal and longitudinal learning from medical imaging and clinical data. Potential projects may address disease progression and prognosis, multimodal and foundation models, domain generalization, uncertainty estimation, explainable AI, digital twins and world models, with a strong application focus on ophthalmology and systemic disease. We welcome candidates interested in co-designing an innovative project combining methodological advances in AI with clinically relevant applications.		
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Interest 20	Concentration, drying and rehydration of dairy products		
Keywords	*Drying and Dehydration Processes, Soft Matter Physics, Dairy Science and Technology*		
Laboratory	**STLO**	**Host Institution**	**Institut Agro**
Description	The dynamics of evaporation in colloidal systems have been extensively investigated over the past decades. Numerous studies on droplets, films, and confined geometries have revealed complex and often competing drying-induced mechanisms, leading to a variety of morphological outcomes, including crack patterns and pronounced interfacial deformations. Advances in understanding evaporation mechanisms in colloidal systems have progressively shifted research from fundamental physics towards applications across a wide range of fields. This is particularly the case in the dairy industry, where spray drying is a key process for producing a wide variety of powders. The size, morphology, and density of the particles formed during aerosol droplet evaporation determine many of the functional properties of the resulting powders, particularly their encapsulation and rehydration capabilities. Addressing these technological challenges requires overcoming several major scientific barriers related to the evaporation of these complex fluids and the rehydration of the resulting dairy powders. Indeed, in fluids containing non-volatile solutes and colloidal particles, the accumulation of these species at the air–liquid interface leads to the development of concentration gradients. These gradients not only hinder evaporation but may also induce stratification or segregation of the non-volatile components. The resulting spatial organization can persist in the structure of the final dried material, thereby affecting its properties and, ultimately, the functional properties of the powders upon rehydration.		
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Interest 21	Digital Assessment of Movement and Non-Movement Behaviours Using Wearables for Health Research		
Keywords	*Health; Physical activity; Sedentary behaviour, Energy expenditure; Wearables; Accelerometer; Methods; Criterion validity; Algorithms; Data processing; Walking; Walking limitations; Chronic diseases*		
Laboratory	**M2S**	**Host Institution**	**ENS Rennes**
Description	The digital shift in the assessment of human movement behaviour has the potential to profoundly transform our understanding of the relationship between health and movement. However, such progress depends on improved		

	standardization and enhanced validity of assessment methods, including accelerometry. In line with recent international initiatives—such as the World Health Organization's new global guidance to improve the measurement and surveillance of physical activity and sedentary behaviour—our research team is actively investigating the criterion validity of wearables for assessing physical activity under free-living conditions, harmonizing assessment methods across devices, and re-examining their associations with health outcomes. We are also exploring their clinical applications for characterizing movement behaviour in relation to walking limitations among people with chronic diseases. A major strength of our ongoing research programme is the availability of rich datasets collected under free-living conditions in both healthy and clinical populations. These datasets enable efficient data analysis and accelerate the generation of new knowledge. Another key asset is our strong international research network, which fosters collaboration and creates opportunities for impactful research.
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Interest 22	**Wireless communication systems**		
Keywords	*Massive MIMO - Distributed networks - Resource allocation - Optimization*		
Laboratory	**IETR**	**Host Institution**	**INSA Rennes**
Description	The post-doc position will envolve the development of various resource allocation techniques (alternate optimization, reinforcement learning, graph coloring, etc.) to solve different optimization problems (ex : maximizing the energy efficiency of distributed MIMO systems). The inclusion of practical transceiver models with realistic constraints, as well as practical channel measurements, will also be considered.		
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Interest 23	Artificial Intelligence, Neuro-Symbolic AI, AI-Driven Software Engineering, Web Technologies, and Intelligent Systems Engineering		
Keywords	*Neuro-symbolic AI; generative AI; AI agents; intelligent automation; AI-driven software engineering; next-generation software architectures; knowledge-intensive systems; intelligent Web applications; autonomous systems; human-AI collaboration; emerging digital technologies; AI-powered innovation; domain engineering; defence and dual-use technologies.*		
Laboratory	**Lab-STICC**	**Host Institution**	**ENSTA**
Description	I am interested in collaborating with ambitious postdoctoral researchers eager to explore emerging technologies, challenge established approaches, and develop new ideas at the intersection of artificial intelligence, software engineering, Web technologies, and complex intelligent systems. A central area of interest is neuro-symbolic AI, particularly the combination of learning, reasoning, structured knowledge, and generative AI to create more capable and versatile intelligent systems. Other directions include AI agents and agent-based architectures, AI-assisted software creation, new paradigms for designing and evolving complex software systems, and intelligent Web applications that connect knowledge, services, and autonomous capabilities. I am also interested in how these technologies can reshape systems engineering in demanding application domains, including defence, autonomous systems, and other contexts where intelligent capabilities must interact with complex, heterogeneous environments. Opportunities include exploring new software and system architectures, developing AI-enabled engineering tools, and investigating technologies with strong potential for practical deployment and broader technological impact. Rather than focusing on predefined research topics, I encourage candidates to bring their own ideas, technical expertise, and scientific vision. I particularly welcome original, interdisciplinary, and forward-looking proposals that connect emerging scientific advances with ambitious technological challenges, explore unconventional approaches, and open up new application possibilities. The goal is to create an environment in which curiosity, technical creativity, and scientific ambition can lead to innovative concepts, experimental prototypes, and potentially transformative applications. Candidates who enjoy exploring uncharted research directions and bridging fundamental ideas with real-world opportunities are especially encouraged to get in touch.		
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Interest 24	Molecular Biology
Keywords	*Transcription, Splicing, RNA Polymerase II, transcriptomics.*

Laboratory	GGB	Host Institution	UBO
Description	Our lab focuses on understanding the coupling between RNA polymerase II transcription and pre-messenger RNA processing in cancer and genetic disorders. We use various molecular biology techniques, such as nascent RNA sequencing, CLIP-seq, ChIP-seq, RT-PCR, CRISPR/Cas9, etc., to study how RNA polymerase II can affect maturation of pre-mRNA. We also investigate how mutations in splicing factors can affect transcription regulation.		
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Interest 25	Marine Microbiology		
Keywords	*Southern Ocean, Genomics time series*		
Laboratory	BEEP	Host Institution	UBO
Description	The Microbial Ecogenonemics group uses large next-generation DNA sequencing datasets, together with environmental 'omics, bioinformatics and numerical ecology tools, to address relevant questions in marine microbial ecology. Our current research focuses on bacterial genome plasticity in a coastal marine environments (MicroBrest Coastal Microbial Observatory project), establishing an Atlas of microbial genes and genomes from the Southern Ocean (ACE-ecogenomics project) and from the deep-sea sediment (ABYSS project). We are also interested in applying these approaches to address environmental issues such as marine microplastic, biocorrosion and pollutant removal.		
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Interest 26	Lipid chemistry for nucleic acids delivery		
Keywords	*organic synthese, lipid, mRNA, LNP, formulation*		
Laboratory	CEMCA	Host Institution	UBO
Description	Lipid nanoparticles (LNPs) are a leading delivery platform for nucleic acids, particularly messenger RNA (mRNA), with promising applications in vaccination, gene therapy, and treating diseases for which there is currently no effective therapeutic strategy. Despite recent advances, several challenges remain in their development, including improving transfection efficiency (i.e. the amount of mRNA delivered and released from the endosome), understanding biodistribution mechanisms and optimising physicochemical properties, particularly in the context of aerosol administration.		

	This project aims to take an integrated approach to designing innovative LNPs by combining the synthesis of new lipids, formulation optimisation and biological evaluation. The first strand of the project will focus on designing and synthesising new lipid molecules, particularly ionisable lipids. The structure of these lipids will be modified to establish relationships between structure, properties and activity. Particular attention will be paid to the nature of ionisable groups and the architecture of hydrophobic chains, as well as the introduction of functional groups that are likely to improve biocompatibility and interaction with biological membranes. The second area of focus will be the formulation of LNP and the characterisation of their physicochemical properties (such as size, polydispersity, encapsulation efficiency and stability). Strategies for optimising formulations will be explored to identify key parameters for enhancing transfection efficiency. The third strand will be devoted to the biological evaluation of the formulations in collaboration with biological partners. The ultimate aim of this project is to develop new, adaptable lipid platforms and strengthen the fundamental knowledge required for designing more effective, better tolerated vectors suited to targeted therapeutic applications.
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Interest 27	**Robotics - Control&Guidance**		
Keywords	*Guidance and Control, path planning, marine autonomous system, anti-collision, Reinforcement Learning*		
Laboratory	**Lab-STICC**	**Host Institution**	**ENSTA**
Description	My research focuses on the hybridisation of artificial intelligence and classical control methods for the guidance and control of marine robots. Classical approaches (robust control, structured H∞ synthesis, global optimisation) provide formal guarantees of stability, robustness and safety, but struggle with poorly known dynamics, disturbances and unexpected events. Learning-based methods, in particular deep reinforcement learning, adapt well to these conditions but offer few guarantees. I combine the two: learning-based adaptive control embedded in model-based control frameworks, where AI adapts the controller parameters or reconfigures the control while the classical structure preserves safety and interpretability. Applications include sim-to-real transfer of adaptive control for underwater vehicles under current disturbance, actuator fault recovery on a physical AUV, and bio-inspired learning for more sample-efficient adaptation. A second line of work addresses autonomous navigation and collision avoidance under the COLREGs, including their vague or ambiguous rules, through reinforcement learning, simulation (COLSim) and human factors. These topics are developed in collaboration with Flinders University and Naval Group, and are validated experimentally on marine robots.		

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Interest 28	**Energy**		
Keywords	*Electrical Eng.*		
Laboratory	**Naval Academy Research**	**Host Institution**	**Ecole Navale**
Description	Project about ship eng.		
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Interest 29	**Mechanical Engineering – Solid Mechanics of Multi-Material Assemblies (adhesive bonding, hybrid joining)**		
Keywords	*structural adhesive bonding; hybrid joining (weld-bonding, resistance spot welding); multi-material assemblies; edge effects; multiaxial experimental characterisation (Arcan, tension/compression–torsion); constitutive modelling; finite element methods; fracture surface analysis; lightweight vehicles; marine structures*		
Laboratory	**IRDL**	**Host Institution**	**ENSTA Institut Polytechnique de Paris – Brest campus**
Description	Multi-material assemblies are key to the energy and environmental transitions of the transport and marine industries: lighter vehicles, durable offshore and marine renewable energy structures, and more frugal manufacturing. Combining steel, aluminium and composites requires reliable joining technologies, such as structural adhesive bonding and hybrid processes (e.g. weld-bonding, where adhesive and resistance welding are combined). Yet designing these joints remains challenging. Stress concentrations and edge effects drive failure, the in-situ behaviour of a thin adhesive layer differs from bulk material, and manufacturing conditions (surface preparation, curing, thermal and electrical loads during welding) and ageing strongly affect performance. Our group at IRDL (UMR CNRS 6027) develops experimental, theoretical and numerical approaches to these issues. They include original multiaxial test methods (modified Arcan, tension/compression–torsion devices) with full-field measurement, nonlinear constitutive models (viscoplasticity, pressure and temperature dependence), dedicated finite elements and strongly coupled multiphysics simulations, as well as quantitative analysis of fracture surfaces. This		

	work is carried out in close collaboration with industry (automotive OEMs and SMEs) through collaborative national and regional projects. It also benefits from the ExcelCar industrial 4.0 platform in Rennes. A Bienvenüe+ postdoctoral researcher could contribute to open questions such as: linking joining processes to mechanical performance; multiphysics coupling in hybrid joints; durability and fatigue of bonded structures in harsh (marine) environments; data-driven or physics-informed modelling and identification; and design methods for industrial use. Candidates in experimental mechanics, computational mechanics, materials science or physics are welcome to propose their own methodology and ideas. This research addresses the Brittany S3 strategic areas "Industry for smart production" (materials, mobility) and "Maritime economy for blue growth".
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Interest 30	**Elucidating important reaction mechanisms in catalytic chemistry by using mass spectrometry and molecular modeling.**		
Keywords	*reaction mechanisms, catalysis, mass spectrometry, kinetic modeling, quantum chemistry modeling*		
Laboratory	**CEMCA**	**Host Institution**	**UBO**
Description	A home-modified mass spectrometer instrument has been set up in our group to study and, ultimately, elucidate the mechanisms of e.g. complex catalytic processes. By operating at low pressure inside the instrument, it is possible to manipulate isolated compounds and subject them to up to 3 successive reactive collisions with various gaseous or volatile compounds. The low-pressure conditions inside the mass spectrometer prevent undesired bimolecular reactions of transient species, thus providing a virtually completely non-reactive environment. Given the extremely high reactivity and/or very short lifetimes of intermediate species in certain catalytic processes, this device could enable the detection and identification of these species in order to elucidate detailed aspects of their mechanisms. Controlled energy conditions also make it possible to determine the elementary steps of the reaction through out-of-thermal equilibrium kinetic modeling and comparison with quantum chemistry calculations. Such calculations can be performed using our computing facilities and specialized softwares available in our laboratory. Several other configurations are also possible for studying the kinetic aspects of chemical reactions in the condensed phase, for example through online monitoring of species using our mass spectrometers. Enantioselective catalytic processes can also be studied using a dedicated configuration of our instruments.		
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Interest 31	International law		
Keywords	*Law of the sea, ABNJ, ISA, benefit-sharing, international cooperation, development finance, non-state actors, climate finance, international organizations*		
Laboratory	**AMURE**	**Host Institution**	**UBO**
Description	Marie Guimezanes is lecturer at the University of Western Brittany since 2021. Her research focuses on North-South relations, international cooperation, international climate law, and the law of the sea. Her thesis in international law, defended at the University of Toulouse, focused on the role of international NGOs in development aid effectiveness governance. She has participated in several research projects, funded in particular by the Harvard IGLP, on indicators in international law. She is currently working on multilateral climate finance. Since joining the AMURE research unit in Brest, she has also taken an interest in the position of developing countries in the international law of the sea, particularly with regard to benefit sharing in the context of the exploration and exploitation of resources in areas beyond national jurisdiction, within the framework of the ISA and the BBNJ Agreement. She is a member of the International Development Law Study Network.		
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Interest 32	Microarchitectural Side- and Covert-Channel Attacks		
Keywords	*Artificial Intelligence (AI), Cybersecurity/Hardware security*		
Laboratory	**Lab-STICC**	**Host Institution**	**UBS**
Description	The Host institution, Lab-STICC (CNRS UMR 6285), Université Bretagne Sud, is working in collaboration with Prof. Khurram Bhatti, Safe, Secure, & Sustainable Systems Design (S4D) Group, Computer Science Department, University of Exeter (UoE), UK on the topic of Microarchitectural Side- and Covert-Channel Attacks. Their research address the following scientific questions. Tackle security vulnerabilities that arise at the intersection of software and hardware, particularly at the Microarchitecture, and develop performance-preserving AI-assisted adaptive vulnerability assessment and mitigation techniques through software–hardware co-design. Establish a unified security evaluation framework for secure memory (cache) architectures, addressing current methodological inconsistencies in security evaluation of hardware.		

	Partnering institutions offer an excellent research environment. Lab-STICC, France, is a leading laboratory in embedded systems security and embedded AI, with strong national and international collaborations. It contributes to the PEPR Cybersécurité and PEPR AI programmes. Lab-STICC at UBS provides facilities for embedded system prototyping, hardware security evaluation, and access to high-performance computing clusters. The lab brings together ~20 researchers in embedded systems security and embedded AI. The UoE, UK, is a leading Russell Group research-intensive university, ranked ~150–200 globally and top 10–15 in the UK. With strong research impact and major investments in AI and data science, it offers an excellent environment for collaborative research in AI, cybersecurity, and secure systems. The UoE offers direct access to ISCA, a £3m HPC facility at the university, supporting advanced research across disciplines. Prof. Khurram is also affiliated with the Alan Turing Institute, UK, via the Turing University Network. Both institutions have been working together for more than 10 years and have an excellent track record of successful collaboration. Together, both teams were among the first researchers to develop AI-based intrusion detection mechanisms to detect microarchitectural attacks and to propose cache memory mechanisms to enforce their protection against cache SCAs.
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Interest 33	**Food microbiology**		
Keywords	*sporulated bacteria, thermal resistance, metals, surfaces, biofilms*		
Laboratory	**LUBEM Quimper**	**Host Institution**	**UB0**
Description	As a newly recruited lecturer, I am currently developing my research thematic. I would like to study the impact of metals (Copper, Iron, Silver...) on the thermal resistance of bacterial spores. This research could be completed by bioavailabilities studies of metals in food matrices for sporulated bacteria, and / or the degradation and use of metals from metalic surfaces in biofilms. Different approaches could be proposed by the post-doc: microscopy images to locate metals inside spores, biofilms formation in microfluidics, study of the mechanisms involved... More globally, any subject related to thermal resistance of sporulated bacteria or possibly to sporulated bacteria in biofilms could be considered.		
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Interest 34	**Molecular chemistry**

Keywords	*functional material, luminescence, coordination chemistry, supramolecular chemistry*		
Laboratory	**CEMCA**	**Host Institution**	**UB0**
Description	This project aims to provide access to a new class of functional polymetallic complexes combining a unique set of switchable physical properties (luminescence, molecular magnetism). A part of the project will be dedicated to their selective functionalization while the second part will study in-depth the possible correlations between their physical properties.		
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Interest 35	**Clinical Psychology, Psychopathology, Psychoanalytic Clinical Practice : Clinical Work with Children, Adolescents and Adults. Autism. Affinity-Based Therapy. Art and Creative Processes**		
Keywords	*Autism – Affinity-based therapy – Digital affinities – Autistic forms of compensation – Institutional care and support – Art and the subjective functions of creative expression – Subjective compensations and inventions – Psychic dynamics and clinical psychopathology – Psychoanalytic clinical practice.*		
Laboratory	**RPPsy**	**Host Institution**	**Université Rennes 2**
Description	My research is conducted within the RPPsy research laboratory (Research in Psychopathology and Psychoanalytic Clinical Practice) at Université Rennes 2, France. One of my main research areas is autism. Part of my work aims to investigate the specific psychodynamic of autism and its modes of compensation, from both a fundamental and an applied perspective. From a fundamental perspective, the objectif is to define as a distinct psychic structure with specific mode of functioning, particularly in relation to the body, speech and language. From an applied perspective, the objective is to develop relevant tools to support diagnostic assessment and therapeutic practice, from both scientific and clinical standpoints. I have explored the specific nature of transference in clinical work with autistic individuals and developed affinity therapy : an approach that draws on autistic individuals' passions and interests as a means of opening up pathways to the world, social relationships, language, speech and knowledge. This therapy, which is grounded in autistic individuals'passions or specific interests, make it possible to develop a bespoke combination of support and therapeutic approaches for autistic individuals in institutional settings. My research subsequently turned towards the creative dimension of autism. More recently, I have investigated the supplementary function of creative expression, opening up a broader research area focused on individual and singular forms of subjective compensation and support through writing, painting and music.		
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Interest 36	**Clinical Psychology, Psychopathology, Psychoanalytic Clinical Practice : Contemporary Discourses and Symptoms. Current Issues in Psychological Distress**		
Keywords	*Contemporary discourses and symptoms – Contemporary depression – Hypermodern parenting – Parental burnout – Depressive symptoms in children and adolescents – Psychological distress in children – School refusal (school phobia) – Bullying and harassment – War neurosis – Exile – Suicidal behaviours – Verbal, gender-based and sexual violence – Addiction – Substance abuse – Psychic dynamics and clinical psychopathology – Psychoanalytic clinical practice.*		
Laboratory	**RPPsy**	**Host Institution**	**Université Rennes 2**
Description	My research is conducted within the RPPsy research laboratory (Research in Psychopathology and Psychoanalytic Clinical Practice) at Université Rennes 2, France. My work focuses on contemporary discourses and symptoms, as well as their underlying psychic dynamics and psychopathological processes. One major strand of my research investigates contemporary depression, examining the various manifestations of disturbances in mood, ranging from feelings of sadness to profound existential suffering. This research is conducted both at a theoretical and fundamental level and in applied clinical contexts, with the aim of identifying structural diagnostic criteria that can support clinical assessment. I am particularly interested in depressive symptoms and their interweaving with contemporary discourses and modes of jouissance (including modern forms of addiction and contemporary anxiety), as well as their emergence as consequences of trauma (war, phobias, bullying and harassment, and verbal violence). These research interests have led me to explore the field of childhood and adolescent depression, including suicidal tendencies in very young children and suicidal acts. My research also examines verbal, sexual and gender-based violence affecting children, with the aim of developing approaches to prevention and combating such violence. I also investigate burnout as a symptom of hypermodernity, resulting from the subjective devastation wrought by contemporary discourses, ranging from workplace suffering to parental despair. Drawing on research into parental burnout, our work has sought to analyse and identify the consequences of contemporary discourses on parenting in the twenty-first century, particularly in relation to the emergence of parental management and the managerial approach to parenting. We also investigate the clinical dimensions of modern obstetrics and reproductive medicine (surrogacy, MPA, and medically assisted reproduction [MAR]), as well as their clinical implications for the interplay between demand, rights and desire in the subjective constitution of a child.		
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