

BIENVENUE

INTERESTS FOR SUPERVISION

Interest #	Research field
1	Sociology of education
2	Biomechanics and ergonomics
3	Linguistics, Language 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

Interest 1	Sociology of education		
Keywords	<i>European Higher Education Area; European Student Mobility; Equality of access</i>		
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	<i>on-body sensors, biofeedback, human-exoskeleton interaction, virtual reality</i>		
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	<i>barriers to thought, french grammar, verb, collaborativ research, LexiCOMut</i>		
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	<i>differential equations, algebraic geometry, symbolic computation</i>		
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	<i>Geology, Hydrology, Biology, Geochemistry, Remote Sensing, Geophysics</i>		
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	<i>deployable structure, 4D printing, fibre reinforced composite</i>		
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 abstraction 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	<i>stochastic numerics, geometric numerical integration, manifolds, Lie-group methods, Hopf algebra, Butcher series, ergodicity, multiscale</i>		
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	<i>Soil quality indicators, decision support tool, spectral analysis, machine learning</i>		
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	<i>agroecology, landscape ecology, community ecology, spatio-temporal patterns, long term surveys, field margin, hedgerow, vegetation, multifunctionality</i>		
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	<i>humanities, art, digital, AI</i>		
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	<i>protein, functional properties (foaming,gelling), structure-function</i>		
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	<i>Methodology in main-group chemistry - Silicon heterocycles - Hydroboration reactions - Organoaluminum derivatives - Main-group polymers - Methodology in main-group chemistry</i>		
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	<i>VRPTW, Routing, Operations Research</i>		
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	<i>leukemia, myelodysplastic neoplasm, patient samples, lenalidomide, translational research</i>		
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	<i>Additive manufacturing, fused granulate fabrication (FGF), digital twin, CFD, multiphysics numerical simulation</i>		
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	<i>rheology, fiber suspension, model, CFD, active particles</i>		
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. Papathanasiou, 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	<i>Rare-earth elements, magnetism, luminescence, molecules, surface deposition</i>		
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	<i>aero/hydrofoils, transition, separation</i>		
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 Medicine		
Keywords	<i>Trustworthy AI; Multimodal Learning; Longitudinal Modeling; Digital Twins, World Models, Medical Imaging; Ophthalmology; Foundation Models; Computer Vision; Disease Progression; Clinical Prediction</i>		
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	<i>Drying and Dehydration Processes, Soft Matter Physics, Dairy Science and Technology</i>		
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	<i>Health; Physical activity; Sedentary behaviour, Energy expenditure; Wearables; Accelerometer; Methods; Criterion validity; Algorithms; Data processing; Walking; Walking limitations; Chronic diseases</i>		
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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