

# PhD research lines open to CSC scholarship applicants under cooperative agreement\*

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\* If you are unable to find what you are looking for on this list, please contact us at [incoming.asia@upm.es](mailto:incoming.asia@upm.es). We will be happy to assist you.

## Agroengineering

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- 1) [Bulk solids handling](#)  
Supervisor: Álvaro Ramírez  
Email: [alvaro.ramirez@upm.es](mailto:alvaro.ramirez@upm.es)
- 2) [Circular economy transition with socio-civic commitment](#)  
Supervisor: Justo García Navarro  
Email: [justo.gnavarro@upm.es](mailto:justo.gnavarro@upm.es)
- 3) [Addressing the Impact of Ultra Violet Radiation on Fungal Biology and possible applications on Control of fungal plant pathogens](#)  
Supervisor: Miguel Ángel Muñoz García  
Email: [miguelangel.munoz@upm.es](mailto:miguelangel.munoz@upm.es)
- 4) [Monitoring grassland dynamics as a complex system](#)  
Supervisor: Ana M. Tarquis  
Email: [anamaría.tarquis@upm.es](mailto:anamaría.tarquis@upm.es)

## Biotechnology and bioinformatics

- 1) [Root clock based traits for more yield and resilience: towards a sustainable agriculture](#)  
Supervisor: Miguel Moreno-Risueno  
Email: [miguelangel.moreno@upm.es](mailto:miguelangel.moreno@upm.es)
- 2) [Gene regulatory networks controlling root stem cells and its interaction with low/high temperature stress](#)  
Supervisor: Miguel Moreno-Risueno  
Email: [miguelangel.moreno@upm.es](mailto:miguelangel.moreno@upm.es)
- 3) [Engineering synchronous communication routes in eukaryotic consortia for biotechnological applications](#)  
Supervisor: Krzysztof Wabnik  
Email: [k.wabnik@upm.es](mailto:k.wabnik@upm.es)

## Computational systems biology and genomics

- 1) [Evolution-proof engineering approaches for plant-associated bacteria](#)  
Supervisor: Alejandro Couce  
Email: [a.couce@upm.es](mailto:a.couce@upm.es)
- 2) [Empirical application of Genomic selection in a wheat breeding program](#)  
Supervisor: Julio Isidro y Sánchez  
Email: [j.isidro@upm.es](mailto:j.isidro@upm.es)

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## Interactions of plants with environment

- 1) [Autophagy mechanisms in response to abiotic stress in model and cultivar plants](#)  
Supervisor: Jesús Vicente Carbajosa & Raquel Iglesias Fernández  
Email: [jesus.vicente@upm.es](mailto:jesus.vicente@upm.es); [raquel.iglesias@upm.es](mailto:raquel.iglesias@upm.es)
- 2) [Plant responses to nutrient limitation](#)  
Supervisor: Joaquín Medina  
Email: [medina.joaquin@inia.es](mailto:medina.joaquin@inia.es)
- 3) [Elucidating the signal perception and integration mechanisms that orchestrate plant growth repression in plants under abiotic stress](#)  
Supervisor: Stephan Pollmann  
Email: [stephan.pollmann@upm.es](mailto:stephan.pollmann@upm.es)
- 4) [Associations of symbiotic bacteria with plants](#)  
Supervisor: Luis Rey  
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## Plant development

- 1) [Root clock based traits for more yield and resilience: towards a sustainable agriculture](#)  
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- 2) [Gene regulatory networks controlling root stem cells and its interaction with low/high temperature stress](#)  
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## Applied Mathematics

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- 1) [Inverse problems](#)  
Supervisor: Cristóbal J. Meroño Moreno  
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- 2) [Dynamics of cosmological models](#)  
Supervisor: Ernesto Nungesser  
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- 3) [Numerical approximation and control for systems governed by partial differential equations](#)  
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- 4) [High multiplicity for superlinear indefinite problems](#)  
Supervisor: Andrea Tellini  
Email: [andrea.tellini@upm.es](mailto:andrea.tellini@upm.es)
- 5) [Multiscale and coupled fields in solid mechanics](#)  
Supervisor: José Merodio  
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- 6) [Optimization of ship routing for ship remodeling decisions](#)  
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## Biomedical Engineering

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- 1) [Living-cell mechanics](#)  
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- 2) [Artificial intelligence and signal/image processing for biomedical and health applications](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 3) [Artificial intelligence and signal/image processing for the evaluation of neurodegenerative disorders](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 4) [Artificial intelligence and image processing for the evaluation of COVID-19 disease](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 5) [Complexity analysis of biomedical signals](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 6) [Radar technology for monitoring biomedical signs in biomedical and health applications](#)  
Supervisor: Juan Ignacio Godino-Llorente  
Email: [ignacio.godino@upm.es](mailto:ignacio.godino@upm.es)
- 7) [Intelligent therapeutic exergames](#)  
Supervisor: Martina Eckert  
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- 8) [Laser bioprinting applied to 3D skin substitutes](#)  
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- 9) [Multiscale and coupled fields in solid mechanics](#)  
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- 10) [ICT for personalized medicine](#)  
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- 11) [Surgical Training and Image Guided Surgery](#)  
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- 12) [Neurorehabilitation and Brain Health Engineering](#)  
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## Chemical Engineering

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- 1) [Numerical simulation of air quality and interactions with climate](#)  
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- 2) [Advanced treatments for wastewater regeneration and reuse](#)  
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- 3) [Waste biomass valorization to materials for environmental purposes](#)  
Supervisor: José Antonio Díaz López  
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- 4) [Advanced oxidation processes for the water and wastewater treatment](#)  
Supervisor: María José Martín de Vidales Calvo & Evangelina Atanes Sánchez  
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- 5) [New approaches to improve the performance of biomass electrolysis for green-hydrogen production](#)  
Supervisor: Antonio Juan Dos Santos-García & Ángel Caravaca  
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- 6) [Synthetic light harvesting materials towards direct hydrogen production from solar energy](#)  
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- 7) [Degradation of pharmaceuticals and other contaminants of emerging concern from water media](#)  
Supervisor: Antonio Juan Dos Santos-García  
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## Civil Engineering and Architecture

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- 1) [Circular economy transition with socio-civic commitment](#)  
Supervisor: Justo García Navarro  
Email: [justo.gnavarro@upm.es](mailto:justo.gnavarro@upm.es)
- 2) [Innovation and sustainability in building construction technology](#)  
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- 3) [Multiscale and coupled fields in solid mechanics](#)  
Supervisor: José Merodio  
Email: [jose.merodio@upm.es](mailto:jose.merodio@upm.es)

## Electrical & Electronic Engineering

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- 1) [Medium Voltage Wireless Power Transfer DC Transformer](#)  
Supervisor: Miroslav Vasic  
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- 2) [SiC based Solid State Transformer for the future H2 plants](#)  
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- 3) [General Purpose Multicell Power Amplifier](#)  
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## Environmental Engineering & Energy

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- 3) [Lifespan estimation of insulation systems used in electrical assets](#)  
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- 4) [Waste biomass valorization to materials for environmental purposes](#)  
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- 5) [Soiling effect on solar panels, consequences in the energy production, and application to agrivoltaic systems](#)  
Supervisor: Miguel Ángel Muñoz García  
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- 6) [Innovation and sustainability in building construction technology](#)  
Supervisor: Evangelina Atanes Sánchez & Alejandra Vidales Barriguete  
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- 8) [Numerical modelling of laser additive manufacturing processes](#)  
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- 9) [New approaches to improve the performance of biomass electrolysis for green-hydrogen production](#)  
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- 10) [Synthetic light harvesting materials towards direct hydrogen production from solar energy](#)  
Supervisor: Antonio Juan Dos Santos-García  
Email: [aj.dossantos@upm.es](mailto:aj.dossantos@upm.es)
- 11) [Degradation of pharmaceuticals and other contaminants of emerging concern from water media](#)  
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- 12) [Offshore Wind Energy.Floating structures: mooring line studies](#)  
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- 13) [Offshore Wind Energy. Analysis of different types of fixed foundations](#)  
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- 14) [Offshore Wind Energy. Scour protection and design expressions in monopiles foundations](#)  
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## ICTs

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### Artificial intelligence and cognitive technologies

- 1) [Artificial intelligence and signal/image processing for biomedical and health applications](#)  
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- 2) [Artificial intelligence and signal/image processing for the evaluation of neurodegenerative disorders](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 3) [Artificial intelligence and image processing for the evaluation of COVID-19 disease](#)  
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- 4) [Complexity analysis of biomedical signals](#)  
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Email: [ignacio.godino@upm.es](mailto:ignacio.godino@upm.es)
- 5) [Radar technology for monitoring biomedical signs in biomedical and health applications](#)  
Supervisor: Juan Ignacio Godino-Llorente  
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- 6) [Ontology-based Knowledge Graph construction methods and techniques](#)  
Oscar Corcho  
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- 7) [Machine-learning-based energy-saving methods to manage resource allocation to multimedia applications in multicore embedded systems](#)  
Dr. Ángel M. Groba González  
Email: [angelmanuel.groba@upm.es](mailto:angelmanuel.groba@upm.es)
- 8) [Artificial Intelligence on Knowledge Graphs](#)  
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- 9) [Semantic interoperability in the Web of Things](#)  
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- 10) [Intelligent therapeutic exergames](#)  
Supervisor: Martina Eckert  
Email: [martina.eckert@upm.es](mailto:martina.eckert@upm.es)
- 11) [Digitalization in Society 5.0: helping citizens to early detection of Multiple Sclerosis disease](#)  
Supervisor: Joaquín Ordieres Meré  
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- 12) [GNSS Spoofing, Detection, and Mitigation](#)  
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- 13) [Monitoring grassland dynamics as a complex system](#)  
Supervisor: Ana M. Tarquis  
Email: [anamaria.tarquis@upm.es](mailto:anamaria.tarquis@upm.es)
- 14) [Deep Learning Models for Radiological Annotation of Non-Small Cell Lung Cancer in a Labeled Data Scarce Scenario](#)  
Supervisor: Consuelo Gonzalo-Martín  
Email: [consuelo.gonzalo@upm.es](mailto:consuelo.gonzalo@upm.es)

## Electronic engineering and telecommunications technologies

- 1) [Graphene field-effect transistors \(GFET\)](#)  
Supervisor: Fernando Calle  
Email: [fernando.calle@upm.es](mailto:fernando.calle@upm.es)
- 2) [Graphene on GaN devices](#)  
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Email: [fernando.calle@upm.es](mailto:fernando.calle@upm.es)
- 3) [Interconnectors using graphene](#)  
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- 4) [5G communications for railway and UAVS](#)  
Supervisor: Cesar Briso Rodríguez  
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- 5) [Channel modelling for virtual acoustics](#)  
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- 6) [Automatic Analysis of Acoustic Scenes](#)  
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- 7) [Development and implementation of Decode&Forward \(D&F\) Relay Node \(Layer 2\) using FPGAs in mmWaves](#)  
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- 8) [Integrated Access Backhaul \(IAB\) Networks: Implementation of Small Cell in mmWaves using a SDR Platform](#)  
Supervisor: José Ignacio Alonso Montes  
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- 9) [Low temperature spin pumping using 2D materials](#)  
Supervisor: José Luis Prieto Martín  
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- 10) [Design and application of antennas for industrial applications](#)  
Supervisor: Ricardo Albarracín  
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- 11) [Graphene Solar Cells for Green Energy](#)  
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- 12) [Graphene Supercapacitors for Green Energy](#)  
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- 13) [Nanomanipulation of nanomaterials with atomic force microscope \(AFM\) and scanning electron microscope \(SEM\)](#)  
Supervisor: Javier Martínez Rodrigo  
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- 14) [MBE growth and characterization of III-Nitrides nanostructures for optoelectronic applications](#)  
Supervisor: Miguel Ángel Sánchez García  
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- 15) [Short-Range Wireless Communications \(SRWC\)](#)  
Supervisor: Supervisor: Antonio Pérez Yuste  
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- 16) [GNSS Spoofing, Detection, and Mitigation](#)  
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## Software engineering and applications software

- 1) [Lifespan estimation of insulation systems used in electrical assets](#)  
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- 2) [Design and application of antennas for industrial applications](#)  
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- 3) [Intelligent therapeutic exergames](#)  
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- 4) [Experimentation with Deep Neural Networks to Solve Software Engineering Challenges](#)  
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## Industrial Design

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## Industrial Management

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- 2) [Quantum Computing applied to Process Quality Prediction](#)  
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## Materials Engineering

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- 1) [Living-cell mechanics](#)  
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- 2) [Graphene field-effect transistors \(GFET\)](#)  
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- 3) [Graphene on GaN devices](#)  
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- 4) [Interconnectors using graphene](#)  
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- 5) [Infrared and THz photonics: plasmonic and phononic metamaterials and sensor development](#)  
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- 6) [Ultracold atomic gases](#)  
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- 7) [Geometry of atomic and molecular systems](#)  
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- 8) [Advanced treatments for wastewater regeneration and reuse](#)  
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- 9) [Low temperature spin pumping using 2D materials](#)  
Supervisor: José Luis Prieto Martín  
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- 10) [Lifespan estimation of insulation systems used in electrical assets](#)  
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- 11) [Design and application of antennas for industrial applications](#)  
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- 12) [Graphene Solar Cells for Green Energy](#)  
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- 13) [Graphene Supercapacitors for Green Energy](#)  
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- 14) [Nanomanipulation of nanomaterials with atomic force microscope \(AFM\) and scanning electron microscope \(SEM\)](#)  
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- 16) [Waste biomass valorization to materials for environmental purposes](#)  
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- 17) [Straintronics and Piezotronics in 2D Materials using Surface Acoustic Waves](#)  
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- 18) [Laser Post-Processing of Metal Parts Produced by Additive Manufacturing](#)  
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- 19) [MBE growth and characterization of III-Nitrides nanostructures for optoelectronic applications](#)  
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- 20) [Innovation and sustainability in building construction technology](#)  
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- 21) [Advanced oxidation processes for the water and wastewater treatment](#)  
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- 22) [Ultrafast laser functionalization of engineered surfaces](#)  
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- 23) [Multiscale and coupled fields in solid mechanics](#)  
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- 24) [New approaches to improve the performance of biomass electrolysis for green-hydrogen production](#)  
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- 25) [Synthetic light harvesting materials towards direct hydrogen production from solar energy](#)  
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- 26) [Degradation of pharmaceuticals and other contaminants of emerging concern from water media](#)  
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## Mechanical Engineering

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- 1) [Dust explosions and protective equipment](#)  
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- 2) [A Novel Tracking Control Strategy with Adaptive Noise Cancellation for Complex Mechanical Systems](#)  
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## Mechatronics

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- 2) [A Novel Tracking Control Strategy with Adaptive Noise Cancellation for Complex Mechanical Systems](#)  
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## Physics

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- 1) [Infrared and THz photonics: plasmonic and phononic metamaterials and sensor development](#)  
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- 3) [Intelligent therapeutic exergames](#)  
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- 5) [Physical activity and pregnancy](#)  
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- 7) [Coach leadership, sport career, sport events and mental health in sport](#)  
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- 8) [Pelvic floor in sports, physical Activity and fitness en older adults, lifestyle and sedentary behavior](#)  
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- 9) **Physical activity and sport: East and West, values education through physical activity and sports psychology of sport**  
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- 10) **Models of social projection of physical and sports activities, education through sport (school and after-school programs), evaluation in physical education**  
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- 11) **Performance analysis in swimming, biomechanical analysis in swimming, coordinative analysis in sports**  
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- 12) **Physical activity and adapted sport, inclusion in physical education, applied research in physical activity and sport for people with disabilities**  
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## Transportation Engineering

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- 2) **Developments of 5G Systems in Millimeter Bands in Railways Scenarios: Application to Channel Modeling Propagation and Virtual Coupling**  
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- 3) **Sustainability impact assessment of micro mobility systems**  
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- 4) **Impact of the growth of e-commerce on urban mobility patterns**  
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