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# Industriales Research Meeting

Escuela Técnica Superior de Ingenieros Industriales  
Universidad Politécnica de Madrid  
April 4 - 5, 2017

# CONFERENCE AT A GLANCE

April 4<sup>th</sup>, 2017  
RESEARCH WORKS AND PATENTS

Registration	8:30
Opening Session Asunción de María Gómez, <i>Vice - Rector (UPM)</i> Emilio Mínguez, <i>Director (ETSII - UPM)</i> Óscar García, <i>Vice - Director (ETSII - UPM)</i> (Salón de Actos)	9:00 - 9:20
Keynote Presentations by Professors of the ETSII - UPM (Salón de Actos)	9:20 - 10:00
Oral Session by Doctoral Students of the ETSII - UPM (Aula C / Aula D)	10:00 - 12:00
Poster Session: Research Projects and Patents (Sala de la Máquina)	12:00 - 14:30

The April 4<sup>th</sup> day will be dedicated to the presentation of research works carried out by PhD students and Professors/Researchers of our School. Additionally, the existing patents will be presented in this session.



# CONFERENCE AT A GLANCE

## April 5<sup>th</sup>, 2017 RESEARCH GROUPS AND COMPANIES

<p><b>Welcome</b> <b>Guillermo Cisneros</b> <i>Rector of the Universidad Politécnica de Madrid</i> <b>José Manuel Torralba</b> <i>Director Gral. Universidades e Investigación de la Comunidad de Madrid</i> <b>Emilio Mínguez</b> <i>Director (ETSII - UPM)</i> (Salón de Actos)</p>	9:00 - 9:30
<p><b>Plenary Session</b> <b>Avelino Corma</b> <i>Premio Príncipe de Asturias de Investigación Científica y Tecnológica 2014</i> (Salón de Actos)</p>	9:30 - 10:30
<p><b>Keynote Presentations</b> <b>by Professors of the ETSII - UPM</b> (Salón de Actos)</p>	10:30 - 11:30
<p><b>Poster Session:</b> <b>Research Groups and Companies</b> (Sala de la Máquina)</p>	11:30 - 14:00
<p><b>Awards Ceremony &amp; Closing</b> (Salón de Actos)</p>	14:00 - 14:30

The April 5<sup>th</sup> day will be dedicated to the Research Groups, Centres and Institutes of the ETSII that will show their main lines. In the same way, partner companies will show their research works in which they are involved.



# SCIENTIFIC AGENDA

## TUESDAY, April 4<sup>th</sup> 2017

**8:30 REGISTRATION**

**9:00 - 9:20 OPENING SESSION (*Salón de Actos*)**

*Asunción de María Gómez Pérez, Vice - Rector for Research, Innovation and Doctorate*

*Emilio Mínguez Torres, Director of the ETSII - UPM*

*Óscar García Suárez, Vice - Director for Research, Doctorate and Relations with Companies of the ETSII - UPM*

**9:20 - 10:00 KEYNOTE PRESENTATIONS (*Salón de Actos*)**

*Gonzalo Jiménez Varas, Assistant Professor ETSII (UPM)  
La belleza de descubrir: un viaje desde Mileto hasta el mundo post-Fukushima*

*Francisco Javier Cara Cañas, Assistant Professor ETSII (UPM)  
Aportaciones estadísticas al análisis modal de edificios y puentes*

**10:00 - 12:00 ORAL SESSION**

### *SESSION 1 (Aula C)*

**Chairmen Ignacio Pavón, Joaquín Martínez**

**10:00** *Respuesta de los R-NPs en seco o inmersos en agua. Ana López Hernández*

**10:15** *Elongación de nanopartículas metálicas embebidas en un material dieléctrico producidas por irradiación con iones pesados altamente energéticos. Alejandro Prada Valverde*

**10:30** *Análisis de los efectos de las rupturas estructurales y de la volatilidad concentrada en los precios del gas de importación en España. Pablo Ángel Cansado Bravo*

**10:45** *Diseño y estudio del comportamiento de estructuras basadas en Metamateriales Geomiméticos Inspirados en las Redes De Bravais. Graciela Fernández Méjica*

**11:00** *Visualización de datos en acústica ambiental como forma de disminuir las molestias por ruido. Luis Gascó Sánchez*

**11:15** *Evaluación del reciclado mecánico de PLA y sus nanocompuestos dedicados a aplicaciones de envasado. Freddy Beltrán González*

**11:30** *Definición de procesos de metalurgia secundaria basados en tratamientos al calcio como herramienta para la mejora del mecanizado a alta velocidad de los aceros de colada continua calmados con aluminio. Izaskun Alonso Oña*

**It will be presented an award to the best presentation of this session**

# SCIENTIFIC AGENDA

## SESSION 2 (Aula D)

### Chairmen

**Sara Lauzurica, Claudio Rossi**

- 10:00** *Seguimiento e interceptación de peatones: Una aplicación de la robótica móvil a la vigilancia de las infraestructuras críticas.* **Mario Andrei Garzón Oviedo**
- 10:15** *Una arquitectura general para la navegación autónoma de sistemas aéreos no tripulados.* **José Luis Sánchez López**
- 10:30** *Inversor monofásico para la competición "the little box challenge".* **Regina Ramos**
- 10:45** *Interfaz de control y coordinación multi-robot.* **Juan Jesús Roldán Gómez**
- 11:00** *Análisis de accidentes en contenciones nucleares bajo una nueva perspectiva.* **Kevin Fernández-Cosials**
- 11:15** *Robot actuado por cables tirantes para simulación de condiciones subacuáticas con aplicación en robots humanoides submarinos.* **Alejandro Rodríguez Barroso**
- 11:30** *Remote Drive: Un UGV militar para misiones de vigilancia.* **Miguel Clavijo Jiménez**

It will be presented an award to the best presentation of this session

## 12:00 - 14:30 POSTER SESSION (Sala de la Máquina)

The layout of the Sala de la Máquina with the poster distribution will be shown in the final version of the program.

### ACOUSTICS ENGINEERING

- [ACO-01] *Noise data communication as a non-acoustic factor for mitigating aviation noise.* **Gascó, Luis; Asensio, César; de Arcas, Guillermo**
- [ACO-02] *Validation of therapies for Tinnitus treatment. Enriched Acoustic Environment (EAE).* **Cobo, Pedro; Garzón, Christiam**
- [ACO-03] *Acoustic stimulation for Parkinson's Disease: a longitudinal pilot study.* **Gálvez, Gerardo; González, David; Recuero, Manuel; de Arcas, Guillermo**

### AEROSPACE

- [AER-01] *Multi-UAV coordination and control interface.* **Roldán, Juan Jesús**
- [AER-02] *Low Power Distribution Module for Space Application: Analysis and Comparison of Different Architectures and DC/DC Topologies.* **Stevanović, Branislav; Salinas, Guillermo; Alou, Pedro; Oliver, Jesús Angel; Vasić, Miroslav**
- [AER-03] *Real time operating system with reconfiguration support for adaptable satellite operations.* **Pérez, Arturo; Suriano, Leonardo; de la Torre, Eduardo**

### AUTOMATION

- [AUT-01] *A flight altitude estimator for multirotor UAVs in dynamic and unstructured indoor environments.* **Bavle, Hriday; Sánchez-López, José Luis; Rodríguez-Ramo, Alejandro; Sampedro, Carlos; Campoy, Pascual**
- [AUT-02] *A general architecture for autonomous navigation of unmanned aerial systems.* **Sánchez-López, José Luis; Molina, Martín; Campoy, Pascual**

# SCIENTIFIC AGENDA

- [AUT-03] *Computer Vision for Sense & Avoid Onboard Unmanned Aerial Vehicles.* **Carrio, Adrian; Campoy, Pascual**
- [AUT-04] *CHEMOCONTROL.* **Rossi, Claudio; Barrientos, Antonio; Del Cerro, Jaime; Marrazza, Giovanna; Ravalli, Andrea**
- [AUT-05] *UNEXMIN - underwater explorer for flooded mines.* **Claudio Rossi; Sergio Domínguez; Ramón Suárez; Zorana Milosevic**
- [AUT-06] *Tracking and intercepting pedestrians: a robotic approach to surveillance of critical infrastructures.* **Garzón, Mario**
- [AUT-07] *Cable - driven robot to simulate underwater environments.* **Rodríguez, Alejandro; Saltarén, Roque; Aracil, Rafael; Portilla, Gerardo A; Cely, Juan S; García, Cecilia; Carpio, Marco**
- [AUT-08] *Force muscle stimulation based on mechanomyography sensors.* **Samper, José L.; Sánchez-Urán, Miguel A.; Ferre, Manuel; Cordoba, Daniel; García, Ángel; Ruiz, Ricardo; Garnacho, Fernando**
- [AUT-09] *Multimodal Vest for Virtual Reality Applications.* **Ferre, Manuel; García, Gonzalo; Breñosa, José M.; Vargas, David.**
- [AUT-10] *Advanced Telerobotic System for Scientific Nuclear Facilities.* **Ferre, Manuel; Breñosa, José M.; Coloma, Sofia; Rubio, Luis E.**

## BIOENGINEERING AND HEALTH

- [BIO-01] *Comparison of the biosensing performance of Resonant Nanopillars arrays under dry conditions or immersed in fluid.* **Hernández, Ana L ; Casquel, Rafael; Holgado, Miguel; Cornago, Iñaki; Fernández, Fátima ; Ciaurriz, Paula; Sanza, Francisco J; Santamaría, Beatriz ; Maigler, María V.; Laguna, María Fe**
- [BIO-02] *Fabrication and characterization of a label-free optical biosensor based on SiO<sub>2</sub> resonant microstructures.* **Quintero, Sergio A; Sanza, Francisco J.; Holgado, Miguel; López-Romero, David; Laguna, Maria F.; López, Ana; Casquel, Rafael; López, Rocío; Lavin, Alvaro; Santamaría, Beatriz.**
- [BIO-03] *Developing optical label-free Point-of-Care biosensing devices.* **Maigler, M. Victoria; Holgado, Miguel; Lavín, Álvaro; Vicente, Manuel; Domingo, Martín; Sanza, F. Javier; Laguna, M. Fe; Santamaría, Beatriz; López, Rocío; López-Romero, David**
- [BIO-04] *Detection of CST4, MMP9 and S100A6 biomarkers for dry eye disease on an integrated optical label-free biosensor.* **Santamaría, Beatriz; Hernández, Ana López; Maigler, María Victoria, Ramírez, Yolanda; Sanza, Francisco Javier; Casquel, Rafael; Lavín, Álvaro; Laguna; María Fe; Holgado, Miguel**
- [BIO-05] *Biochemical assay development for optimization of immunological system inhibitors.* **López , Rocío; Ramírez, Yolanda; Maigler, María Victoria; López Hernández, Ana; Sanza, Francisco Javier; López-Romero, David; Casquel, Rafael; Lavín, Álvaro; Laguna, M<sup>a</sup> Fé; Holgado, Miguel**
- [BIO-06] *Local blood pressure estimations: The dependence of the subharmonic resonance on ambient pressure.* **Jiménez Fernández, Javier**
- [BIO-07] *Design of an Aspiration Thrombectomy Device for cerebral vessels.* **Talayero, Carlos; Romero, Gregorio; Pearce, Gillian**

## CHEMICAL ENGINEERING

- [CHE-01] *Maceration process of fruits in liquor: Spectroscopic studies of the kinetics.* **Paz, Isabel; Matías, Carmen; Fernández, Ascensión; Pinto, Gabriel**
- [CHE-02] *Science, Technology and Art.* **Pinto, Gabriel; Alonso, José Vicente; Díaz, Francisco; Díaz, Víctor Manuel**
- [CHE-03] *Developing STEM educative and outreach tools.* **Pinto, Gabriel; Prolongo, Marisa**
- [CHE-04] *Degradation of poly(lactic acid) in different aqueous solutions.* **Beltrán, Freddy; Alarcón, Ana; Gordillo, Rodrigo; Cañete, Elena; Perona, Elia; de la Orden, M<sup>a</sup> Ulagares; Lorenzo, Vicente; Martínez-Urreaga, Joaquín**
- [CHE-05] *DecarGas. Low-carbon clean fossils for the next generation.* **Abánades, Alberto; Wetzel, Thomas; Stoppel, Leonid**

# SCIENTIFIC AGENDA

## ELECTRONICS

- [ELE-01] *Control of a single phase inverter with multiple modulation strategies.* **Ramos, Regina; Serrano, Diego; Oliver, Jesús A.; Alou, Pedro; Cobos, José A.**
- [ELE-02] *Advanced topology solutions for high power DC-DC converters for aircraft applications.* **Bouvier, Yann E.; Alou, Pedro**
- [ELE-03] *Isolated Single-Stage Three-Phase Full-Bridge with Current Injection Path PFC Rectifier for Aircraft Application.* **Zhao, Sisi; Oliver, Jesús A.; Alou, Pedro**
- [ELE-04] *Three-phase Buck Rectifier For Aircraft Application With Variable Line Frequency.* **Borović, Uroš; Alou, Pedro; Oliver, Jesus**
- [ELE-05] *A 99.5% efficient 50kW/dm<sup>3</sup> hybrid DC-DC step-up converter for PV applications.* **Serrano, Diego; Vasić, Miroslav; Oliver, J.A.; Alou, Pedro; Cobos, J.A.**
- [ELE-06] *IFEC challenge: High efficiency and high power density isolated DC-DC converter for server applications.* **Vasic, Miroslav; Čohadžić, Dusan; Millán, José Luis; Murga, Ignacio; Gil, Diego; Zubitur, Iñigo.**
- [ELE-07] *Linear Assisted Versus Purely PWM Switched Mode Envelope Amplifier for EER Transmitter.* **Lazarević, Vladan; Vasić, Miroslav; García, Óscar; Patiño, Moisés; Ortega, Francisco**
- [ELE-08] *On the use of blackbox polytopic models to simulate dc microgrids.* **Francés, Airán; Asensi, Rafael; García, Óscar; Prieto, Roberto; Uceda, Javier**
- [ELE-09] *An Analysis of the Influence of Binarization Techniques Applied to Swarm Optimization when Solving the Set Covering Problem.* **Lanza-Gutierrez, Jose M.; Riesgo, Teresa**
- [ELE-10] *Automatic Integration of HLS-Generated Hardware Accelerators in an Embedded Parallel Computing Architecture.* **Rodríguez, Alfonso; de la Torre, Eduardo**
- [ELE-11] *Resilient communications for a multi-FPGA, hardware-accelerated cluster.* **Ortiz, Alberto; Rodríguez, Medina; de la Torre, Eduardo**
- [ELE-12] *Distributed Artificial Neural Network over a Wireless Sensor Network.* **Aledo, David; Moreno, Félix**

## ELECTRICAL ENGINEERING AND MACHINES

- [ELM-01] *Contribution of DFIG wind turbines to Fast-Frequency Response and Power Smoothing.* **Ochoa, Danny; Martínez, Sergio**
- [ELM-02] *Improved Predictive Direct Power Control of Doubly Fed Induction Generator during unbalanced grid voltage based on Four Vectors.* **Zarei, Mohammad Ebrahihm; Veganzones Nicolás, Carlos; Rodríguez Arribas, Jaime.**

## ENERGY

- [ENE-01] *Supercritical CO<sub>2</sub> in a concentrating solar power plant with thermal energy storage.* **González, Luis F.; Muñoz, Javier; Martínez-Val José M.**
- [ENE-02] *Reloj de Sol.* **Cano, Javier; Martínez-Val, Jose María; Abbas, Rubén; San Millán, Julio; Rodríguez, Andrés**
- [ENE-03] *Solar heater: solar tower power at different enthalpies.* **Muñoz - Antón, Javier; González-Portillo, Luis F.; Martínez-Val José M.**
- [ENE-04] *A comparison of optical features between parabolic trough collectors and linear Fresnel collectors.* **Abbas, Rubén; Martínez-Val, José María**
- [ENE-05] *Regulatory proposals for the development of renewable energy self-consumption in Spain.* **Mármol-Acitores, Gloria; Rodríguez-Monroy, Carlos**
- [ENE-06] *A review on the effects of structural breaks and volatility clustering characteristics of Spanish gas and Brent prices.* **Cansado, Pablo Angel; Rodríguez, Carlos**
- [ENE-07] *Time-dependent atomic physics in the interaction of ultraintense X-ray laser with matter.* **Fernandez Tello, Elisa V; Cotelo, Manuel; Oliva, Eduardo; De la Varga, Alberto G.; Velarde, Pedro**

# SCIENTIFIC AGENDA

## ENVIRONMENTAL ENGINEERING

- [ENV-01] *Environmental sustainability assessment of municipal solid waste management through carbon footprint.* **Pérez, Javier; Lumbreras, Julio; Rodríguez, Encarnación**
- [ENV-02] *Improvements of air quality simulations of particulate matter in the Iberian peninsula with road dust resuspension and dust emission modules.* **de la Paz, David; Borge, Rafael; Vedrenne, Michel**
- [ENV-03] *Modelling the effects of local emission abatement measures in hot-spots of Madrid.* **Quaassdorff, Christina; Borge, Rafael**

## LASER TECHNOLOGY

- [LAS-01] *Assessment of 2D geometries in immune systems responses using LIFT (Laser Induced Forward Transfer) as a high accuracy bioprinting technique.* **Lauzurica, Sara; Gómez-Fontela, Miguel; Márquez, Andrés; Notario, Laura; Lauzurica, Pilar; Molpeceres, Carlos**
- [LAS-02] *Laser direct writing techniques for metallization of solar cells.* **Munoz-Martin, David; Chen Yu; Morales, Miguel; Canteli, David; Molpeceres, Carlos**
- [LAS-03] *Laser functionalization of surfaces.* **Canteli, David; Márquez, Andrés; Munoz-Martin, David; Faleiro, Gabriel; Santamaria, Samuel; Lauzurica, Sara; Morales, Miguel; Molpeceres, Carlos**
- [LAS-04] *Laser crystallization of silicon and study by finite element modelling.* **Canteli, David; Munoz-Martin, David; Morales, Miguel; Molpeceres, Carlos**
- [LAS-05] *Numerical study on the effects of dimensionless parameters on Laser Induced Forward Transfer printability range.* **Morales, Miguel; López, Iván; Munoz-Martin, David; Molpeceres, Carlos**

## MATERIALS

- [MAT-01] *Crystallization Behaviour of PHBV-INT-WS2 Inorganic Nanotubes Nanocomposites.* **Silverman, Tyler; Naffakh, Mohammed; Marco, Carlos; Ellis, Gary**
- [MAT-02] *Electrode modified with Thiolated DAB dendrimers to form self-assembled monolayers with AuNPs and HRP for biosensing.* **Ospina, Evelyn; Garcia M. Pilar; Alonso, Beatriz, Casado, Carmen**
- [MAT-03] *Poly(propyleneimine) Dendrimers: Combined Experimental and Simulation Study.* **León, Salvador; García, Pilar; Fernández, Andrés**
- [MAT-04] *Elongation of metallic nanoparticles embedded in a dielectric matrix produced by irradiation with swift heavy ions.* **Prada, Alejandro; Peña-Rodríguez, Ovidio; Olivares, José; Oliver, Alicia; Rodríguez-Fernández, Luis; Bringa, Eduardo; Perlado, José Manuel; Rivera, Antonio**
- [MAT-05] *In situ monitoring and modelling the optical properties of silica irradiated with swift heavy ions.* **Díaz-Núñez, Pablo; Peña-Rodríguez, Ovidio; R. Páramo, Angel; Prada, Alejandro; Rivera, Antonio; Sordo, Fernando; Perlado, Jose Manuel; Crespillo, Miguel; Olivares, José**
- [MAT-06] *Influence of grain boundaries on the radiation-induced defects and H retention in nanostructured and coarse-grained tungsten.* **Panizo, Miguel; Valles, Gonzalo; González, César; Martín, Ignacio; González, Raquel; Gordillo, Nuria; Iglesias, Roberto; Guerrero, Carlo; Perlado, José Manuel; Rivera, Antonio.**
- [MAT-07] *Water absorption in polypropylene-cellulose eco-composites.* **González-Defix, Anaïs; de la Orden, M<sup>a</sup> Ulagares; González-Sánchez, Carlos; Beltrán, Freddy; Lorenzo, Vicente; Martínez Urreaga, Joaquín**
- [MAT-08] *Definition of a secondary metallurgy process for the modification of oxide inclusions by Ca treatment in Al-killed high speed machining steels.* **Alonso, Izaskun; Berg, Martín**
- [MAT-09] *Determination of the interfacial behavior in graphene oxide-epoxy nanocomposites by multiscale modeling.* **Fernández Zapico, Guillermo; Muñoz Guijosa, Juan Manuel**



# SCIENTIFIC AGENDA

## MANAGEMENT AND INDUSTRIAL ORGANIZATION

- [MIO-01] *Project Management Coaching Model: First insights.* **Ballesteros, Luis; Ortiz, Isabel**
- [MIO-02] *Cultural risks in projects developed in South and East countries. An approach to identify risks in international cooperation projects.* **Rodríguez, Rocío; Ortiz, Isabel.**
- [MIO-03] *Open data assessment of spanish cities.* **Sisto, Raffaele; García, Javier**
- [MIO-04] *Mapping city metrics methodologies.* **García, Javier; Sisto, Raffaele**
- [MIO-05] *Entrepreneurship policy agenda in the EU explained: a contribution to understand the European entrepreneurial path and its way forward.* **Arenal, Alberto; Armuña, Cristina**
- [MIO-06] *Exploring the factors that contribute to transform entrepreneurial intention into action. Reflections on potential entrepreneurs' needs and entrepreneurial education programs.* **Armuña, Cristina; Arenal, Alberto**
- [MIO-07] *Big Data for Sustainability in the Digital Era: Methodological Framework towards a Conscious and Smart Governance.* **Del Río, Gema; González, Camino; Uruburu, Ángel**
- [MIO-08] *Unwarranted Variations in Healthcare and the Role of Business Intelligence.* **Lessanibahri, Sina; Gastaldi, Luca; González Fernández, Camino**
- [MIO-09] *Increasing the trading prediction by mining aggregated human texting messages.* **Yang Liu; Joaquín Ordieres Meré**
- [MIO-10] *Measuring general elections in Spain via Twitter, based on geolocated user comments.* **Franco Riquelme, José N.; Ordieres Meré, Joaquín B.**
- [MIO-11] *Revisiting the past and addressing the future of public infrastructure project.* **Hetemi, Eral; Ordieres M., Joaquín; Dominguez, María L.**
- [MIO-12] *International Manufacturing Network: Operational issues and reshoring.* **Sayem, Ahmed; Ortega Mier, Miguel, Feldmann, Andreas**
- [MIO-13] *Application of Optimization and Simulation in the Aeronautic Industry.* **Pulido, Raúl; Borreguero-Sanchidrián, Tamara; García-Sánchez, Álvaro; Ortega-Mier, Miguel.**
- [MIO-14] *Mandatory Convertibles: An Efficient Form of Capital Issuance.* **Huerga, Angel; Rodriguez-Monroy, Carlos**
- [MIO-15] *ICTs and their impact on the profitability of SMEs in the main tourist areas of Guatemala.* **Rivera, Sigfrido; Rodríguez-Monroy, Carlos**
- [MIO-16] *Innovation Management in Knowledge Intensive Service Firms.* **Lemus-Aguilar, Isaac; Hidalgo, Antonio; Cagliano, Raffaella**
- [MIO-17] *Determinants of governance structure in multipartner alliances: a multiple case study.* **Barbic, Frano; Hidalgo, Antonio.**
- [MIO-18] *Network Cooperation - an emerging model of connected collaboration for the Sustainable Development Goals 2030 agenda.* **Acevedo, Manuel; Moreno, Ana; Mataix, Carlos.**

## MECHANICS, MANUFACTURING AND STRUCTURES

- [MMS-01] *Process analysis of a 4 axis single point micro cutting machine.* **Lopez-Estrada, Luis; Fajardo, Marcelo; Vizán, Antonio**
- [MMS-02] *Cutting parameters identification in end milling operations.* **Leal-Muñoz, Erardo; Vizán, Antonio**
- [MMS-03] *Development of a 3PRS-XY Machine Tool to Single Point Cutting Process in Microcutting.* **Fajardo, Marcelo; López-Estrada, Luis; Vizán, Antonio**
- [MMS-04] *Characterization physical and chemical properties of epoxy resins for additive manufacturing by photopolymerization.* **V. Niño, Ely D.; Endrino, José L.; Díaz, Andrés**
- [MMS-05] *Cell scaffolds design using pentamode structures based on Bravais Lattices.* **Fernández Méjica, Graciela; Díaz Lantada, Andrés**
- [MMS-06] *Modelling of the mechanical behaviour of the photopolymerization processes of resins intended for additive manufacturing (AMT) using laser-stereolithography: The influence on part quality.* **de Blas, Adrián; Fernández, Guillermo; Díaz, Andrés**

# SCIENTIFIC AGENDA

- [MMS-07] *Similarity index as a tool to compare impact history records.* **Pacios Álvarez, Antonia; Huerta Gómez de Merodio, M. Consuelo; Alonso Álvarez, Jesús; Parra-Hidalgo, José Antonio; López Lázaro, Luis**
- [MMS-08] *Human Impact on glass: study of the excitation level measured on a plate versus energy applied by the pendulum.* **Huerta, M<sup>a</sup> Consuelo; Pacios-Álvarez, Antonia; Parra-Hidalgo, José A.; Alonso, Jesús; Pardo, Sergio**
- [MMS-09] *Smartwatch's usefulness for hand - arm vibration exposure assessment.* **Sigcha, Luis; Pavón, Ignacio; López, Juan Manuel; De Arcas, Guillermo**
- [MMS-10] *Bending strength study of repaired coaches structures.* **Rincón, Dávila; Alcalá, Enrique**
- [MMS-11] *Design, fabrication and test of a short mechanical model of the orbit corrector magnets for the High-Luminosity LHC.* **García-Matos, Jesús A.; Abramian, Pablo; Calero, Jesús; Gómez, Pablo; Gutiérrez, Jose Luis; García-Tabarés, Luis; Lopez, Daniel; Munilla, Javier; Toral, Fernando; Bourcey, Nicolas; Fessia, Paolo; Izquierdo-Bermudez, Susana; Pérez, Juan Carlos; Todesco, Ez**

## MATHEMATICS AND STATISTICS

- [MST-01] *Extreme Value Theory: Applications for adverse weather conditions.* **Sáez, Cristina; García-Martos, Carolina; Sánchez, María Jesús**
- [MST-02] *Local forecasting of electric demand: Madrid.* **Carretero, Miguel; Caro, Eduardo; Juan, Jesús; Cara, Javier**

## NUCLEAR TECHNOLOGY

- [NUC-01] *Advanced variance reduction methods in Monte Carlo calculation.* **Magán, Miguel; Sordo, Fernando; Perlado, Jose M.**
- [NUC-02] *Monte Carlo study of detection systems of explosives and illicit substances using a D-D neutron generator.* **Cevallos, Lenin; Gallego, Eduardo; Guzmán, Karen; García Gonzalo**
- [NUC-03] *Fukushima Daiichi Unit 2 Accident Analysis with MELCOR 2.1.* **Bocanegra, Rafael; Di Marcello, Valentino; Sánchez-Espinoza, Victor H.; Jiménez, Gonzalo**
- [NUC-04] *Towards the definition of a local damage criteria for containment safety analysis.* **Fernández-Cosials, Kevin; Bocanegra, Rafael; Estévez-Albuja, Samanta; Goñi, Zuriñe; Jiménez, Gonzalo**
- [NUC-05] *Nuclear Data for the Safety of Lead-based Cooled Facilities.* **Romero, Pablo; García-Herranz, Nuria; Álvarez-Velarde, Francisco**

## SEISMIC ENGINEERING

- [SEI-01] *Numerical simulation of shaking table tests on a reinforced concrete waffle-flat plate structure.* **Galé, David; Benavent, Amadeo**
- [SEI-02] *Seismic upgrading of frame structures with a soft first story by using hysteretic dampers.* **Mota Paez, Santiago Felix; Benavent Climent, Amadeo**
- [SEI-03] *Seismic design of structures with seismic isolation based on rocking columns.* **Rios, Germán; Benavent, Amadeo**

## VEHICLES AND RAILWAYS

- [VEH-01] *Algorithms to aid operational management in urban transport systems.* **Herrero, Daniel; García, Álvaro; Ortega, Miguel**
- [VEH-02] *Development of an energy management embedded controller for a range-extended hybrid vehicle using model-based design and HILs.* **Resino, Daniel; Marcos, David; López, José María; Fernández, David**
- [VEH-03] *A comparison of local path-planning interpolation methods for autonomous driving in urban environments.* **Artuñedo, Antonio; Godoy, Jorge; Villagra, Jorge**

# SCIENTIFIC AGENDA

- [VEH-04] *Method for knowledge based maintenance of current collection systems in railway installations.* **Calvo, Álvaro; Sanz, Juan de Dios**
- [VEH-05] *Accuracy improvement of finite element models of electric vehicles components manufactured with thermoplastic materials in crash environments.* **Rivera, Javier; Martínez, Luis; García Antonio**
- [VEH-06] *Strategies for grid integration of electric vehicles.* **Alvaro-Hermana, Roberto; Fraile-Ardanuy, Jesús; Martínez, Sergio**
- [VEH-07] *Large-signal modeling of bidirectional battery charger for electric vehicles. System-level approach based on agent-based models in v2g environment.* **Naziris, Antreas; Asensi, Rafael; Uceda, Javier**
- [VEH-08] *Hybridization Percentage Influence on Hybrid Energy Storage Systems Efficiency for Electric Buses.* **Nájera, Jorge; Rodríguez, Jaime; de Castro, Rosa María**
- [VEH-09] *Remote Drive: A military UGV for surveillance missions.* **Clavijo, Miguel; Jiménez, Felipe; Naranjo, José E.; Gómez, Óscar**

## PATENT

- [PAT-01] *Horizontal rotary system for concentrating solar radiation.* **Martínez-Val, José M**
- [PAT-02] *Brayton cycle with heat sink temperature close to the critical isothermal line.* **Martínez-Val, José M**
- [PAT-03] *Intermediate heat exchanger of free-dilatation concentric tubes.* **Martínez-Val, José M**
- [PAT-04] *Convection inhibited open-air solar thermal receiver.* **Martínez-Val, José M**
- [PAT-05] *A concentric tube penetration device.* **Martínez-Val, José M**
- [PAT-06] *Gasket for assembling rotatory pipes.* **Martínez-Val, José M**
- [PAT-07] *Procedure and system for the automatic detection of thrust reverse activation during aircraft landing.* **Asensio, César; Ruiz, Mariano; de Arcas, Guillermo; Recuero, Manuel; López, Juan Manuel**
- [PAT-08] *On board car system and method for road status surface identification.* **López, Juan Manuel; Alonso, Jesús; Ruiz, Mariano; de Arcas, Guillermo; Pavón, Ignacio; Asensio, César**
- [PAT-09] *Electronic system for environmental acidity (pH) measurement based on optical sensors.* **M<sup>a</sup> Á. Villegas, M. García, J. Peña, G. de Arcas, J.M. López, E. Barrera, A. Llorente**
- [PAT-10] *Sistema de Calibración de Instrumentos Acústicos.* **G. de Arcas, J.M. López, M. Ruiz, M. Recuero, R. Fraile**
- [PAT-11] *System and procedure for the real time detection and identification of sound produced by specific sound sources.* **C. Asensio, M. Ruiz, M. Recuero**
- [PAT-12] *System and method for monitoring a rapid de-excitation system for synchronous machines.* **Platero, Carlos; Granizo, Ricardo; Rebollo, Emilio; Blázquez, Francisco**
- [PAT-13] *Rapid de-excitation system for synchronous machines with indirect excitation.* **Platero, Carlos; Blázquez, Francisco; Redondo, Marta; Granizo, Ricardo**
- [PAT-14] *Process of Fungal Biodegradation on Ground Tyres.* **Ruibal, Constantino; García, Ana M.; Moreno, Diego A.; Benavides, Enrique**
- [PAT-15] *Bioremediation method which is used to concentrate and eliminate radionuclides in radioactive water.* **Moreno, Diego A.; Montero, Felipe**
- [PAT-16] *Portable and autonomous device for airborne particles collection.* **Núñez, Andrés; García, Ana M.; Moreno, Diego A.**
- [PAT-17] *Procedure for marking, encryption, labelling and optical coding.* **M. Holgado, A. Barranco, R. Casquel, A.R. González-Elipe, F.J. Sanza aM.F. Laguna, bSanchez valen cia Juan Ramon; bA Rebollo aF.J. Sanza**
- [PAT-18] *Interferometric Detection Method.* **Holgado, Miguel; Sanza, Francisco Javier; Laguna, María Fe; Lavín, Álvaro; Casquel, Rafael**
- [PAT-19] *Optical detection system for labelling-free high-sensitivity bioassays.* **Holgado, Miguel; Casquel, Rafael; Laguna, María Fe, Molpeceres, Carlos, Morales, Miguel, Ocaña, José Luis**
- [PAT-20] *Method and system for estimating the forces and torques generated by the contact of a tire with the road in an instrumented wheel.* **Javier, García De Jalón De La Fuente; María Dolores, Gutiérrez López**

# SCIENTIFIC AGENDA

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- [PAT-21] *Medical devices based on intelligent materials and complex geometries patented and developed during last decade within UPM's Product Development Laboratory.* **Diaz Lantada, Andrés; Ortego García, Pedro; Lafont Morgado, Pilar**
- [PAT-22] *Feeding carriage for compressor machine and use of same.* **Ordieres, J.; Alba Elias, F.; González Marcos, A.; Martínez Martínez, L.**
- [PAT-23] *Method for increasing the net electric power of solar thermal power plants.* **Platero, Carlos; Blázquez, Francisco; Redondo, Marta; Rodríguez, Jaime**
- [PAT-24] *Método de guiado de dispositivos robóticos teleoperados.* **Ferre, Manuel; Aracil, Rafael; Barrio, Jorge; Suárez, Francisco A.**

## UPM Institutional participation

Oficina de Proyectos Europeos (OPE)

Oficina de Transferencia de Resultados de Investigación (OTRI):

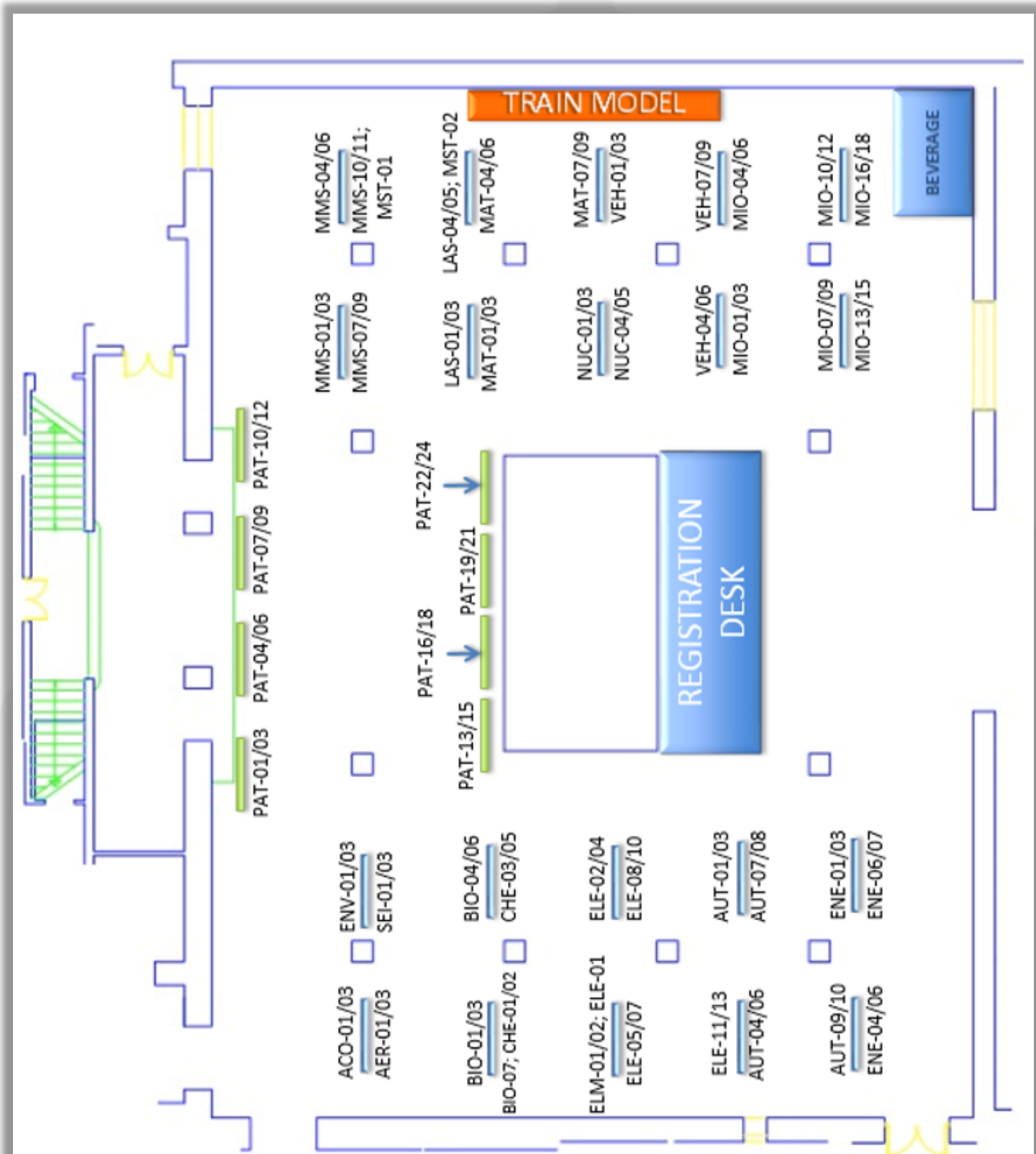
- Área de Propiedad Intelectual e Industrial
- Área de Cultura Científica
- Área de Colaboración público-privada

Centro de Apoyo a la Innovación Tecnológica (CAIT)

**It will be served a free beverage during the poster session for all registered attendees**

# SCIENTIFIC AGENDA

## LAYOUT OF THE POSTER SESSION



# SCIENTIFIC AGENDA

## WEDNESDAY, April 5<sup>th</sup> 2017

### 9:00 - 09:30 WELCOME (*Salón de Actos*)

**Guillermo Cisneros Pérez**, *Rector of the Universidad Politécnica de Madrid*  
**José Manuel Torralba Castelló**, *Director General Universidades e Investigación de la Comunidad de Madrid*  
**Emilio Mínguez Torres**, *Director of the ETSII - UPM*

### 9:30 - 10:30 PLENARY SESSION (*Salón de Actos*)

**Avelino Corma Canós**, *Premio Príncipe de Asturias de Investigación Científica y Tecnológica 2014*  
*Diseño molecular de catalizadores, desde la investigación fundamental hasta la aplicación industrial*

### 10:30 - 11:30 KEYNOTE PRESENTATIONS (*Salón de Actos*)

#### Chairman

**Antonio Rivera**

**Alberto Abánades Velasco**, *Professor ETSII (UPM)*  
*DecarGas: El camino hacia el aprovechamiento de recursos fósiles sin emisiones.*

**Sara Lauzurica Santiago**, *Assistant Professor ETSII (UPM)*  
*Bioimpresión asistida por láser para el estudio de los mecanismos de respuesta del Sistema inmune*

### 11:30 - 14:00 POSTER SESSION (*Sala de la Máquina*)

This session is dedicated to both Research Groups of the ETSII and Companies.  
The layout of the Sala de la Máquina with the poster distribution will be shown in the final version of the program.

## RESEARCH GROUPS, CENTERS AND INSTITUTES

Administración de Empresas

Bioingeniería y Materiales (BIO-MAT)

Ciencia y Tecnología de Sistemas Avanzados de Fisión Nuclear

Control Inteligente

Estadística Computacional y Modelado Estocástico

Fusión Nuclear Inercial y Tecnología de Fusión

Generación Eléctrica con Energía Eólica

Ingeniería de Calidad Alimentaria

# SCIENTIFIC AGENDA

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Ingeniería de Fabricación  
Ingeniería de Máquinas (GI - IM)  
Ingeniería de Organización y Logística  
Ingeniería Sísmica  
Ingeniería y Aplicaciones del Láser  
Instrumentación y Acústica Aplicada (I2A2)  
Laboratorio de Sistemas Autónomos  
Manufactura Avanzada del Láser  
Mecánica de fluidos aplicada a la Ingeniería Industrial  
Modelado y Simulación en Ingeniería Mecánica  
Modelización de Sistemas Termoenergéticos  
Óptica, Fotónica y Biofotónica  
Polímeros: Caracterización y Aplicaciones  
Proyectos y Calidad  
Robótica y Cibernética  
Robots y Máquinas Inteligentes  
Seguridad e Impacto Medioambiental de Vehículos y Transportes (GIVET)  
Tecnologías Ambientales y Recursos Industriales  
Teoría de Aproximación Constructiva y Aplicaciones  
Termodinámica Aplicada a la Ingeniería Industrial (TAII)  
Visión por Computador y Robótica Aérea

Centro de Electrónica Industrial  
Centro de Investigación en Automática y Robótica  
Centro Láser

Centro de Investigación en Tecnologías Ferroviarias (F2I2)  
Centro de Modelado de Ingeniería Mecánica (F2I2)

Instituto de Fusión Nuclear  
Instituto Universitario de Investigación del Automóvil

**It will be served a free beverage during the poster session for all registered attendees**

# SCIENTIFIC AGENDA

## COMPANIES

Chairmen Antonio Rivera, Nuria Martínez

The following companies have confirmed its participation in IRM. The speakers will show the main working lines and projects to the attendees in the electronic poster session

**accenture**  
Alto rendimiento. Hecho realidad.

 **Capgemini Consulting**

  
an NTT DATA Company

**GRUNDFOS** 

  
**REPSOL**

 **Fundación REPSOL**

  
**TECNICAS REUNIDAS**

 **RED ELÉCTRICA DE ESPAÑA**

**AIRBUS**

**alTRAN**

  
**BIOD**  
Bio-Optical Detection

 **lasing**

  
**Sinnofluence**

**Clarke, Modet & C<sup>o</sup>**  
ESPAÑA

**ThalesAlenia Space**  
a Thales / Leonardo company

 **thinkAM**  
ADDITIVE MANUFACTURING TRANSFORMATIONS

 **Fersa**  
Bearings

**nano4ENERGY**

  
**ID LOGISTICS**

 **tecnaTom**

  
**SP Control Technologies**  
www.spcontroltechnologies.com

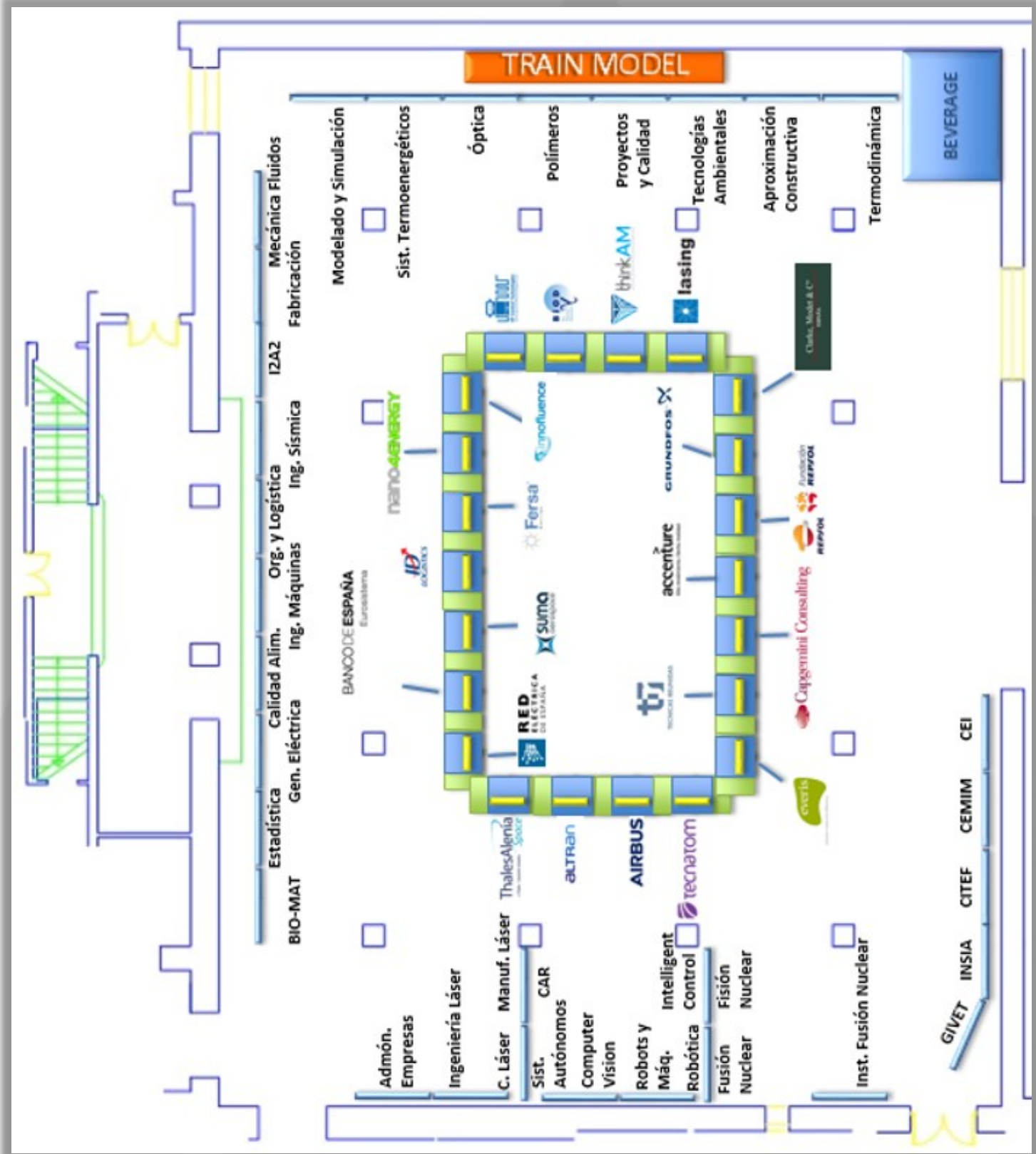
  
**suma aerospace**

**BANCO DE ESPAÑA**  
Eurosistema



# SCIENTIFIC AGENDA

## LAYOUT OF THE POSTER SESSION



# SCIENTIFIC AGENDA

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## **14:00 - 14:30 AWARDS CEREMONY & CLOSING** (*Salón de Actos*)

In the closing session, several awards will be given:

- Award to the **Design of the cover page of IRM17**. This award has been won by Jesús Tordesillas Torres.
- Two awards to **the best oral presentation** of sessions 1 & 2. A Committee will select the best presentation of these sessions.
- Award to the **best poster** of poster session. Another Committee will select this poster among all posters presented during April 4<sup>th</sup> poster session.
- **Raffle** of a submarine camera (the registered attendees will receive the ballots that should be deposited during the posters sessions of April 4 & 5). The winner should be at this session to receive the prize.

# GENERAL INFORMATION

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## REGISTRATION

The *Industriales Research Meeting* is an event to show the research activities of the ETSII-UPM.

Please, register to IRM to get all the advantages of this event:

- Identification badge.
- USB Memory of the event with a copy of the publication.
- A ticket to get a free beverage during the posters sessions.
- A ballot to participate in the raffle of a submarine camera.



Free wifi available  
during all the congress.

Please register at:

<http://www.industriales.upm.es/investigacion/irm/index.es.htm>

## FREE REGISTRATION

## ORGANIZING COMMITTEE

Óscar García Suárez

Nuria Martínez Carpintero

Lucía Alvaredo Olmos

Eduardo Caro Huertas

Ismael Díaz Moreno

Sara Lauzurica Santiago

Ignacio Pavón García

Antonio Rivera de Mena

Subdirección de Investigación, Doctorado y Relaciones con Empresas  
Escuela Técnica Superior de Ingenieros Industriales  
Universidad Politécnica de Madrid

# MEETING VENUE

Salón de actos. Escuela Técnica Superior de Ingenieros Industriales.  
Universidad Politécnica de Madrid.

C/ José Gutiérrez Abascal, 2. 28006 Madrid.

For further information: 91 336 30 89.

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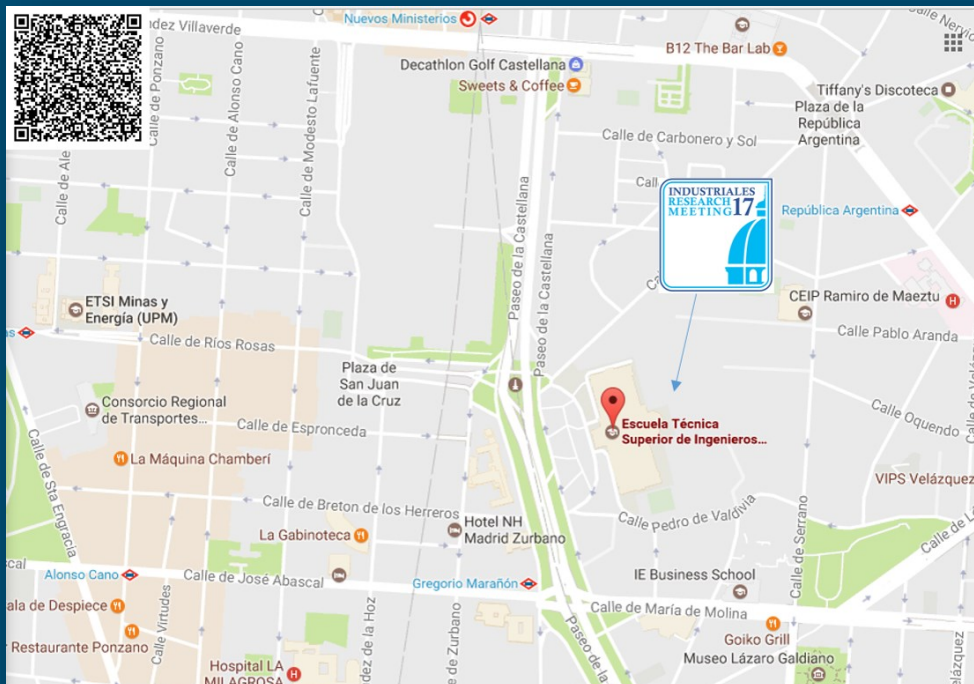
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