The April 4th 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.
<table>
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<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>9:00 - 9:30</td>
<td>Welcome</td>
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<td>Guillermo Cisneros</td>
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<td>Rector of the Universidad Politécnica de Madrid</td>
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<td>José Manuel Torralba</td>
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<td>Director Gral. Universidades e Investigación de la Comunidad de Madrid</td>
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<td>(Salón de Actos)</td>
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<td>9:30 - 10:30</td>
<td>Plenary Session</td>
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<td>Avelino Corma</td>
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<td>Premio Príncipe de Asturias de Investigación Científica y Tecnológica 2014</td>
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<td>10:30 - 11:30</td>
<td>Keynote Presentations</td>
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<td>by Professors of the ETSII - UPM</td>
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<td>(Salón de Actos)</td>
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<td>11:30 - 14:00</td>
<td>Poster Session:</td>
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<td>Research Groups and Companies</td>
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<td>(Sala de la Máquina)</td>
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<td>14:00 - 14:30</td>
<td>Awards Ceremony &amp; Closing</td>
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<td>(Salón de Actos)</td>
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The April 5\textsuperscript{th} 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 4th 2017

8:30 - 9:00  REGISTRATION

9:00 - 9:15  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

9:15 - 09:45  KEYNOTE PRESENTATIONS (Salón de Actos)

Gonzalo Jiménez Varas, Assistant Professor ETSII (UPM)  TBD

Francisco Javier Cara Cañas, Assistant Professor ETSII (UPM)  TBD

9:45 - 11:30  ORAL SESSION

SESSION 1 (Aula C)

Chairmen  Ignacio Pavón, TBD

9:45 - 10:00  Optical performance of Resonant nanopillars: Water immersed vs dry conditions. Ana López Hernández

10:00 - 10:15  Elongation of metallic nanoparticles embedded in a dielectric matrix produced by irradiation with swift heavy ions. Alejandro Prada Valverde

10:15 - 10:30  A review on the effects of structural breaks and volatility clustering characteristics of Spanish gas and Brent prices. Pablo Ángel Cansado Bravo

10:30 - 10:45  Cell scaffolds design using pentamode structures based on Bravais Lattices. Graciela Fernández Méjica

10:45 - 11:00  Data visualization as a tool to decrease noise annoyance. Luis Gascó Sánchez

11:00 - 11:15  Evaluation of the mechanical recycling of PLA and PLA based nanocomposites. Fredds Beltrán González

11:15 - 11:30  Contribution to the definition of a secondary metallurgy process for the modification of oxide inclusions by calcium treatment in al-killed high speed machining steels. Izaskun Alonso Oña

The oral session will be in Spanish
SESSION 2 (Aula D)

Chairmen
Ismael Díaz, TBD

9:45 - 10:00  Tracking and intercepting pedestrians: a robotic approach to surveillance of critical infrastructures. Mario Andrei Garzón Oviedo

10:00 - 10:15  A general architecture for autonomous navigation of unmanned aerial systems. José Luis Sánchez López

10:15 - 10:30  Control of a single phase inverter with multiple modulation strategies based on plant inversion. Regina Ramos

10:30 - 10:45  Multi-UAV coordination and control interface. Juan Jesús Roldán Gómez

10:45 - 11:00  Nuclear Power Plant Containment Analysis under New Perspective. Kevin Fernández-Cosials

11:00 - 11:15  Cable-Driven Robot to Simulate Underwater Environments. Alejandro Rodríguez Barroso


The oral session will be in Spanish

11:30 - 14:00  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
- Noise data communication as a non-acoustic factor for mitigating aviation noise. Gascó Sánchez, Luis
- Validation of therapies for Tinnitus treatment, primary trial. Garzón Pico, Christian Santiago

AEROSPACE
- Low Power Distribution Module for Space Applications: Analysis and Comparison of Different Architectures and DC/DC Topologies. Stevanovic, Branislav
- Multi-UAV coordination and control interface. Roldán Gómez, Juan Jesús
- Real time operating system with reconfiguration support for adaptable satellite operations. Pérez García, Arturo

BIOENGINEERING AND HEALTH
- Acoustic stimulation for Parkinson’s Disease: A longitudinal pilot study. Gálvez García, Gerardo
- Biochemical assay development for optimization of immunological system inhibitors. López Espinosa, Rocío
- Design of an Aspirated Thrombectomy Device for cerebral vessels. Talayero Giménez De Azcárate, Carlos
- Detection of CST4, MMP9 and S100A6 biomarkers for dry eye disease on an integrated optical label-free biosensor. Santamaría Fernández, Beatriz
- Developing optical label-free point-of-care biosensing devices. Maigler López, María Victoria
SCIENTIFIC AGENDA

- Fabrication and characterization of a label-free optical biosensor based on SiO$_2$ resonant microstructures. Quintero Moreno, Sergio Andrés
- Local blood pressure estimations from contrast microbubbles signals. Jiménez Fernández, Javier
- Optical performance of Resonant nanopillars: Water immersed vs dry conditions. Ana López Hernández

CHEMICAL ENGINEERING

- DecarGas. Low-carbon clean fossils for the next generation. Abánades Velasco, Alberto
- Degradation of poly(lactic) acid in different aqueous solutions. Martínez Urreaga, Joaquin
- Maceration process of fruits in liquor: Spectroscopic studies of the kinetics. Paz Antolin, Isabel
- Science, Technology and art. Pinto Cañón, Gabriel
- STEM education and outreach. Pinto Cañón, Gabriel

ELECTRICAL ENGINEERING AND MACHINES

- Contribution of DFIG wind turbines to Primary Frequency Control. Ochoa Correa, Danny
- Improved predictive direct power control of Doubly Fed Induction Generator during unbalanced grid voltage based on Four Vectors. Zarei, Mohammad Ebrahim

ELECTRONICS AND AUTOMATION

- 99.5% Efficient 50 kW/dm$^3$ Hybrid DC-DC Boost Converter for PV Applications. Serrano López, Diego
- A general architecture for autonomous navigation of unmanned aerial systems. Sanchez Lopez, Jose Luis
- Advanced Telerobotic System for Scientific Nuclear Facilities. Ferre, Breñosa, Rubio, Coloma
- Advanced topology solutions for high power DC-DC converters for aircraft applications. Bouvier, Yann E.
- An Analysis of the Influence of Binarization Techniques Applied to Swarm Optimization when Solving the Set Covering Problem. Lanza Gutiérrez, José Manuel
- Automatic Integration of HLS-Generated Hardware Accelerators in an Embedded Parallel Computing Architecture. Rodriguez Medina, Alfonso
- Cable-Driven Robot to Simulate Underwater Environments. Rodríguez Barroso, Alejandro
- CHEMOCONTROL. Rossi, Claudio
- Control of a single phase inverter with multiple modulation strategies based on plant inversion. Ramos, Regina
- Design of Active Three-phase Rectifiers For Aircraft Application. Borovic, Uros
- Distributed hardware ANN over WSN. Aledo Ortega, David
- Force muscle stimation based on mechanomyography sensors. Samper, José Luis
- IFEC challenge: High efficiency and high power density isolated DC-DC converter for server applications. Vasić, Miroslav
- Isolated Single-Stage Three-Phase Full-Bridge with Current Injection Path PFC Rectifier for Aircraft Application. Zhao, Sisi
- Linear assisted versus purely pwm switched mode envelope amplifier. Lazarevic, Vladan
- Machine Learning Techniques for Real-Time Identifying Fluid Characteristics in Oil Wells. Lanza Gutierrez, Jose Manuel
- Multi-Sensor Fusion for Altitude Estimation of UAVs in Indoors Environments with Unknown and Unstructed Obstacles. Bavle, Hriday
- Multimodal Vest for Virtual Reality Applications. Ferre, Breñosa, García, Vargas
- On the use of blackbox polytopic models to simulate dc microgrids. Frances, Airan
- Resilient communications for a multi-FPGA, hardware-accelerated cluster. Ortiz Cuadrado, Alberto
- Tracking and intercepting pedestrians: a robotic approach to surveillance of critical infrastructures. Garzón Oviedo, Mario Andrei
- Underwater explorer for flooded mines. Rossi, Claudio
- Vision-based Aircraft detection onboard Unmanned Aerial Vehicles. Carrio Fernández, Adrián
SCIENTIFIC AGENDA

ENERGY
- A comparison of optical features between parabolic trough collectors and linear Fresnel collectors. Abbas, Rubén
- A review on the effects of structural breaks and volatility clustering characteristics of Spanish gas and Brent prices. Cansado Bravo, Pablo Angel
- Regulatory proposals for the development of renewable energy self-consumption in Spain. Mármol Acitores, Gloria
- Reloj de Sol. Cano Nogueras, Javier
- Solar heater: solar tower power at different enthalpies. Muñoz Antón, Javier
- Supercritical CO2 in a concentrating solar power plant with thermal energy storage. González Portillo, Luis Francisco
- Time dependent atomic physics in the interaction of X-Ray laser with matter. Vázquez Fernández Tello, Elisa

ENVIRONMENTAL ENGINEERING
- Environmental sustainability assessment of municipal solid waste management through carbon footprint. Pérez Rodríguez, Javier
- Improvements of air quality simulations of particulate matter in the Iberian peninsula with road dust resuspension and dust emission modules. De La Paz Martín, David
- Modelling the effects of local emission abatement measures in hot-spots of Madrid. Quaassdorff, Christina

LASER TECHNOLOGY
- Assessment of 2D geometries in immune systems responses using LIFT (Laser Induced Forward Transfer) as a high accuracy bioprinting technique. Lauzurica, Sara
- Laser crystallization of silicon and study by Finite Element Modelling. Canteli Pérez-Caballero, David
- Laser Functionalization of Surfaces. Canteli Pérez-Caballero, David
- Laser direct writing techniques for metallization of solar cells. Muñoz Martín, David
- Numerical study on the effects of non-dimensional parameters on Laser Induced Forward Transfer printability range. Morales Furió, Miguel

MANAGEMENT AND INDUSTRIAL ORGANIZATION
- Application of Optimization and Simulation in the Aeronautic Industry. Pulido, Raul
- Big data for sustainability in the digital era: methodological framework towards a sustainable and smart governance. Del Rio Castro, Gema
- Cultural risks in projects developed in South East countries. Rodriguez Rivero, Rocío
- Determinants of governance structure in multipartner alliances: a multiple case study. Barbic, Frano
- Entrepreneurship policy agenda in the EU explained. A contribution to understand the European entrepreneurial path and its way forward. Arenal Cabello, Alberto
- Exploring the factors that contribute to transform entrepreneurial intention into action. Reflections on the link between entrepreneurs’ needs and entrepreneurial education programs. Armuña González, Cristina
- ICTs and their impact on the profitability of SMEs in the main tourist areas of Guatemala. Rivera Ramos, Sigfrido Gilielmo
- Increasing the trading prediction by mining aggregated human texting messages. Liu, Yang
- Innovation Management in Knowledge Intensive Service Firms. Lemus Aguilar, Isaac
- International Manufacturing Network: Operational issues and reshoring. Sayem, Ahmed
- Mandatory Convertibles: An Efficient Form of Issuing Capital. **Huerga, Angel**
- Mapping city indicators methodologies. **García Lopez, Javier**
- Measuring general elections in Spain via Twitter, based on geolocated user comments. **Franco Riquelme, José Nicanor**
- Network Cooperation - an emerging model of connected collaboration for the 2030 Sustainable Development Goals agenda. **Acevedo Ruiz, Manuel**
- Open Data Assessment in Italian and Spanish cities. **Sisto, Raffaele**
- Project management coaching model: First insights. **Ballesteros Sánchez, Luis Ignacio**
- Revisiting the past and addressing the future of public infrastructure project management. **Hetemi, Ermal**
- Unwarranted Variations in Healthcare and the Role of Business Intelligence. **Lessanibahri, Sina**

**MATERIALS**
- Contribution to the definition of a secondary metallurgy process for the modification of oxide inclusions by calcium treatment in al-killed high speed machining steels. **Alonso Oña, Izaskun**
- Crystallization behaviour of PHBV/WS2 inorganic nanotube nanocomposites. **Silverman, Tyler**
- Determination of the interfacial behavior in graphene oxide-epoxy nanocomposites by multiscale modeling. **Fernández Zapico, Guillermo**
- Electrode modified with a Thiolated DAB dendrimers to form self-assembled monolayers with AuNPs and HRP for biosensing. **Osplea, Evelyn**
- Elongation of metallic nanoparticles embedded in a dielectric matrix produced by irradiation with swift heavy ions. **Prada Valverde, Alejandro**
- Influence of grain boundaries on the radiation-induced defects and hydrogen in nanostructured and coarse-grained tungsten. **Panizo Laiz, Miguel**
- Poly(propyleneimine) Dendrimers: Combined Experimental and Simulation Study. **León Cabanillas, Salvador**
- Water absorption in polypropylene-cellulose ecocomposites. **Martínez Urreaga, Joaquin**

**MATHEMATICS AND STATISTICS**
- Extreme Value Theory: Applications for adverse weather conditions. **Sáez Bonales, Cristina**
- Modeling the effect of non-working days over the Spanish electricity demand. **Caro Huertas, Eduardo**

**MECHANICS, MANUFACTURING AND STRUCTURES**
- Bending strength study of repaired coaches structures. **Rincón Dávila, David**
- Cell scaffolds design using pentamode structures based on Bravais Lattices. **Fernández Méjica, Graciela**
- Cutting parameters identification in end milling operations. **Leal Muñoz, Erardo**
- Design, fabrication and test of a short mechanical model of the orbit corrector magnets for the High-Luminosity LHC. **García Matos, Jesús Ángel**
- Development of a 3PRS-XY Machine Tool to Single Point Cutting Process in Microcutting. **Fajardo Pruna, Marcelo**
- Enhancing the physical and chemical properties of epoxy resins for additive manufacturing by photopolymerization. **Valbuena Niño, Ely Dammier**
- Human Impact on glass: study of the excitation level measured on a plate vs. energy applied by the pendulum. **Huerta Gómez De Merodio, Mº Consuelo**
- 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 Romero, Adrián**
- Process analysis of a 4 axis single point cutting machine. **Lopez-Estrada, Luis Alberto**
- Similarity Index as a Tool to Compare Impact History Records. **Pacios Álvarez, Antonia**
- Smartwatch’s usefulness for hand - arm vibration exposure assessment. **Sigcha Guachamin, Luis Francisco**
NUCLEAR TECHNOLOGY

- Advanced variance reduction methods in Monte Carlo calculation. Magán Romero, Miguel
- Fukushima Daiichi Unit 2 Accident Analysis with MELCOR 2.1. Bocanegra Melián, Rafael
- In situ monitoring the optical properties of silica and modeling of its surface density kinetics irradiated with swift heavy ions. Díaz Núñez, Pablo
- Monte Carlo Study of detection system of explosives and illicit substances using a D-D neutron generator. Cevallos, Lenin
- Nuclear data for the safety of lead-based cooled facilities. Romojarro Otero, Pablo
- Nuclear Power Plant Containment Analysis under New Perspective. Fernández-Cosials, Kevin

SEISMIC ENGINEERING

- Modeling and sensitivity analysis in the integral evaluation of the seismic risk at urban scale. Application to the city of Lorca. Quirós Hernández, Ligia
- Seismic design of structures with seismic isolation based on rocking columns. Rios García, Germán
- Seismic Upgrading of Frame Structures With a Soft First Story by Using Hysteretic Dampers. Mota Paez, Santiago Felix
- Simulation of the shaking table test of a reinforced concrete waffle-flat plate structure. Galé Lamuela, David

VEHICLES AND RAILWAYS

- A comparison of local path-planning interpolation methods for autonomous driving in urban environments. Artuñedo García, Antonio Javier
- A hybrid constraint programming and column generation approach for the crew scheduling problem in underground passenger transport. Herrero Giner, Daniel
- Accuracy improvement of finite element models of electric vehicles components manufactured with thermoplastic materials in crash environments. Rivera Hoyos, Javier
- Development of an energy management embedded controller for a range-extended hybrid vehicle using model-based design and HILs. Resino Zamora, Daniel
- Large-signal modeling of bidirectional battery charger for electric vehicles. System-level approach based on agent-based models in v2g environment. Naziris, Antreas
- Method for knowledge based maintenance of current collection systems in railway installations. Calvo Hernandez, Alvaro
- Remote drive. Clavijo Jiménez, Miguel
- Strategies for grid integration of electric vehicles. Álvaro Hermana, Roberto
PATENTS

- A concentric tube penetration device. Martínez-Val, José Mª
- Bioremediation method which is used to concentrate and eliminate radionuclides in radioactive water. Moreno, Diego A.
- Brayton cycle with heat sink temperature close to the critical isothermal line. Martínez-Val, José Mª
- Convection inhibited open-air solar thermal receiver. Martínez-Val, José Mª
- Dispositivos médicos basados en materiales inteligentes y geometrías complejas patentados desde el Laboratorio de Desarrollo de Productos de la UPM. Diaz Lantada, Andrés
- Feeding carriage for compressor machine and use of same. Ordieres Meré, Joaquín
- Gasket for assembling rotatory pipes. Martínez-Val, José Mª
- Haptic and multimodal fabric. Ferre Pérez, Manuel
- Horizontal rotary system for concentrating solar radiation. Martínez-Val, José Mª
- Interferometric detection method. Holgado Bolaños, Miguel
- Intermediate heat exchanger of free-dilatation concentric tubes. Martínez-Val, José Mª
- Method for increasing the net electric power of solar thermal power plants. Platero Gaona, Carlos Antonio
- Método de medición de esfuerzos generados en el contacto entre el neumático y la calzada mediante la instrumentación de la llanta. García De Jalón, Javier
- On-board car system and method for road status surface identification. Pavón García, Ignacio
- Optical detection system for labelling-free high-sensitivity bioassays. Holgado Bolaños, Miguel
- Portable and autonomous device for airborne particles collection. Núñez Hernández, Andrés
- Procedure and system for the automatic detection of thrust reverse activation during aircraft landing. Asensio Rivera, César
- Procedure for marking, encryption, labelling and optical coding. Holgado Bolaños, Miguel
- Process of Fungal Biodegradation on Ground Tyres (ES 2 293 864 A1). García, Ana M.
- Rapid deexcitation system for synchronous machines with indirect excitation. Platero Gaona, Carlos Antonio
- Sistema electrónico para la determinación de la acidez ambiental (pH) mediante sensores químicos de respuesta óptica. De Arcas, Guillermo
- Software para la Calibración de Instrumentos Acústicos. G. de Arcas, J.M. López, M. Ruiz, M. Recuerdo, R. Fraile
- System and method for monitoring a rapid de-excitation system for synchronous machines. Platero Gaona, Carlos Antonio
- System and procedure for the real time detection and identification of sound produced by specific sound sources. Asensio Rivera, César

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

WEDNESDAY, April 5th 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

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)
Alberto Abánades Velasco, Professor ETSII (UPM)
DecarGas. Low-carbon clean fossils for the next generation
Sara Lauzurica Santiago, Assistant Professor ETSII (UPM)
Assessment of 2D geometries in immune systems responses using LIFT (Laser Induced Forward Transfer) as a high accuracy bioprinting technique

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

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
Ingeniería de Fabricación
Ingeniería de Máquinas (GI - IM)
Ingeniería de Organización y Logística
It will be served a free beverage during the poster session for all registered attendees
COMPANIES

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.

Chairman
Antonio Rivera

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

Award to the winner of the design of the cover page of IRM17
Awards to the best research work
Raffle of a technological gift
GENERAL INFORMATION

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
irm@etsii.upm.es

How to get:

 นอกจากนี้Buses: 7, 12, 14, 27, 40, 45, 147, 150, 250 and Circular(183,402),(787,428)

Subway Stations: Nuevos Ministerios, Gregorio Maraño and República Argentina
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

Please register at: [http://www.industriales.upm.es/investigacion/irm/index.es.htm](http://www.industriales.upm.es/investigacion/irm/index.es.htm)