

**DEPARTAMENTO DE**  
**MECANICA DE MEDIOS**  
**CONT.Y T. ESTRUCTURAS**

**DEPARTAMENTO DE MECANICA DE MEDIOS CONT.Y T.  
ESTRUCTURAS**

**Áreas de conocimiento:**

- MECANICA MEDIOS CONTINUOS Y TEORIA ESTRUCTURAS

## ÁREA DE CONOCIMIENTO: MECANICA MEDIOS CONTINUOS Y TEORIA ESTRUCTURAS

### Actividades de investigación

#### Tesis Doctorales

- Análisis y modelización de estructuras sandwich sometidas a cargas impulsivas  
*Autores:* BUITRAGO, B.  
*Director:* BARBERO, E.  
*Año:* 2012
  
- Caracterización mecánica de espumas metálicas y su aplicación en sistemas absorción de energía  
*Autores:* IRAUSQUIN, I.A.  
*Director:* PEREZ-CASTELLANOS, J. L.  
*Año:* 2012

### Publicaciones y actividades de difusión de resultados

#### Publicaciones en revistas científicas internacionales

- ARANDA, J.; FERNANDEZ-SAEZ, J.  
On the use of variable-separation method for the analysis of vibration problems with time-dependent boundary conditions, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol 226, 2012, pp 2912-2924. REINO UNIDO.
  
- ARANDA, J.; LOYA, J. A. ; FERNANDEZ-SAEZ, J.  
Bending vibrations of rotating nonuniform nanocantilevers using the Eringen nonlocal elasticity theory, *Composite Structures*, Vol. 94, Núm. 9, 2012, pp. 2990-3001, HOLANDA.
  
- GARCIA-CASTILLO, S.K.; SÁNCHEZ-SÁEZ, S. ; BARBERO, E.  
Influence of areal density on the energy absorbed by thin composite plates subjected to high-velocity impacts, *Journal of strain analysis for engineering design*, Vol. 47, 2012, pp. 444-452, REINO UNIDO.
  
- GARCIA-CASTILLO, S.K.; SÁNCHEZ-SÁEZ, S. ; BARBERO, E.  
Nondimensional analysis of ballistic impact on thin woven laminate plates, *International journal of impact*

*engineering*, Vol. 39, Núm. 1, 2012, pp. 8-15, REINO UNIDO.

- GONZALEZ-LOPEZ, S.; FERNANDEZ-SAEZ, J.  
Vibrations in Euler-Bernoulli beams treated with non-local damping patches, *Computers and Structures*, Vol. 108, 2012, pp. 125-134, ESTADOS UNIDOS DE AMERICA.
- LÓPEZ-PUENTE, J. ; LI, S.  
Analysis of strain rate sensitivity of carbon/epoxy woven composites, *International journal of impact engineering*, Vol. 48, 2012, pp. 54-64, REINO UNIDO.
- MOCKO, W.; KOWALEWSKI, Z.L.; RODRÍGUEZ-MARTÍNEZ, J.A.; RUSINEK, A.  
Compressive Viscoplastic Response of 6082-T6 and 7075-T6 Aluminium Alloys Under Wide Range of Strain Rate at Room Temperature: Experiments and Modelling, *Strain*, Vol. 48, 2012, pp. 498-509, REINO UNIDO.
- OLMEDO, A.; SANTIUSTE, C.  
On the prediction of bolted single-lap composite joints, *Composite Structures*, Vol. 94, Núm. 6, 2012, pp. 2110-2117, HOLANDA.
- PEREZ-CASTELLANOS, J. L. ; RUSINEK, A.  
Temperature increase associated with plastic deformation under dynamic compression: application to aluminium alloy al 6082, *Journal of Theoretical and Applied Mechanics*, Vol. 50, Núm. 2, 2012, pp. 377-398, POLONIA.
- PERNAS, J.; PEDROCHE, D.; LÓPEZ-PUENTE, J. ; ZAERA, R.  
Numerical modeling of ice behavior under high velocity impacts, *International Journal of Solids and Structures*, Vol. 49, Núm. 14, 2012, pp. 1919-1927, ESTADOS UNIDOS DE AMERICA.
- RUBIO, L. ; FERNANDEZ-SAEZ, J.  
A new efficient procedure to solve the nonlinear dynamics of a cracked rotor, *Nonlinear dynamics*, Vol. 70, 2012, pp. 1731-1745, HOLANDA.
- SANTIUSTE, C. ; OLMEDO, A.; SOLDANI, X.; MIGUELEZ, M.H.  
Delamination prediction in orthogonal machining of carbon long fiber-reinforced polymer composites, *Journal of reinforced plastics and composites*, Vol. 31, Núm. 13, 2012, pp. 875-885, REINO UNIDO.
- SCHIAVONI, E.; SCARPONI, C.; SÁNCHEZ-SÁEZ, S. ; BARBERO, E. ; SARASINI, F.  
Polypropylene/Hemp Fabric Reinforced Composites: Manufacturing and Mechanical Behaviour, *Journal of biobased materials and bioenergy*, Vol. 6 nº 4, 2012, pp. 361-369, ESTADOS UNIDOS DE AMERICA.
- VADILLO, G. ; LOYA, J. A. ; FERNANDEZ-SAEZ, J.  
First order solutions for the buckling loads of weakened Timoshenko columns, *Computers and mathematics with applications*, Vol. 64, 2012, pp. 2395-2407, REINO UNIDO.
- VADILLO, G. ; RODRÍGUEZ-MARTÍNEZ, J.A.; FERNANDEZ-SAEZ, J.  
On the interplay between strain rate and strain rate sensitivity on flow localization in the dynamic expansion of ductile rings, *International Journal of Solids and Structures*, Vol. 49, Núm. 03-abr, 2012, pp. 481-491, ESTADOS UNIDOS DE AMERICA.
- VARAS, D. ; LÓPEZ-PUENTE, J. ; ZAERA, R.  
Numerical Analysis of the Hydrodynamic Ram Phenomenon in Aircraft Fuel Tanks, *AIAA journal* , Vol. 50, Núm. 7, 2012, pp. 1621-1630, ESTADOS UNIDOS DE AMERICA.
- VARAS, D. ; ZAERA, R.; LÓPEZ-PUENTE, J.  
Numerical modelling of partially filled aircraft fuel tanks submitted to Hydrodynamic Ram, *Aerospace Science and Technology*, Vol. 16, Núm. 1, 2012, pp. 19-28, ALEMANIA.

- ZAERA, R.; RODRÍGUEZ-MARTÍNEZ, J.A.; CASADO, A.; FERNANDEZ-SAEZ, J. ; RUSINEK, A.; PESCI, R.  
A constitutive model for analyzing martensite formation in austenitic steels deforming at high strain rates, *International Journal of Plasticity*, Vol. 29, 2012, pp. 77-101, ESTADOS UNIDOS DE AMERICA.

## Colaboraciones en obras colectivas

- CANTELI, J. A. ; CASTILLO, E.; FERNANDEZ-SAEZ, J. ; FERNANDEZ, D.; GINER, E.  
*Plane Stress at the Crack Front: A Case Incompatible with Linear Elastic Fracture Mechanics*, en: Issues on Mechanical and Civil Engineering: A Symposium to Honour Professor Enrique Alarcón, (1ª ed.), Universidad Politécnica de Madrid (UPM), ESPAÑA, pp. 347-360, 2012.
- MIGUELEZ, M.H.; SANTIUSTE, C. ; SOLDANI, X.; LOYA, J. A.  
*Processing and Mechanical Properties of the Workpiece in Machining of Long-Fiber-Reinforced Composites*, en: Wiley Encyclopedia of Composites, (2), WILEY, pp. 1-14, 2012.
- SANTIUSTE, C. ; SOLDANI, X.; LÓPEZ-PUENTE, J. ; MIGUELEZ, M.H.  
*Analysis of Dynamic Loading of Long Fiber Reinforced Composites*, en: Fiber-Reinforced Composites, NOVA SCIENCE PUBLISHERS INC, ESTADOS UNIDOS DE AMERICA, pp. 497-526, 2012.

## Ponencias y Comunicaciones a congresos

- ARANDA, J.; LOYA, J. A. ; FERNANDEZ-SAEZ, J.  
*On the Use of Variable-Separation Method for the Analysis of Vibration Problems with Time-Dependent Boundary Conditions*; en: Proceedings of the Institution of Mechanical Engineers. Part C Journal of Mechanical Engineering Sci, 2012.
- ARANDA, J.; LOYA, J. A. ; FERNANDEZ-SAEZ, J.  
*Bending vibrations of rotating nanocantilevers using the Eringen nonlocal elasticity theory*; en: Proceedings of the International Conderence on Mechanics of Nano, Micro and Macro Composite Structures, 2012.
- ARTERO, J.A.; PERNAS, J.; VARAS, D. ; ZAERA, R.; LÓPEZ-PUENTE, J.  
*Numerical Modeling of Woven CFRP Partially Fluid Filled Tubes to High Velocity Impacts* , International Conference on Mechanics of Nano, Micro and Macro Composite Structures, *Turín*, ITALIA, 2012.
- CANTELI, J. A. ; GINER, E.; FERNANDEZ, D.; FERNANDEZ-SAEZ, J.  
*A unified analysis of the in-plane and out-of-plane constraints in 3-D linear elastic fracture mechanics*, 19th Conference on FractureKazán , 2012.
- FERNANDEZ-SAEZ, J. ; GINER, E.; FERNANDEZ, D.; LOYA, J. A. ; CANTELI, J. A.  
*Some results on three-dimensional effects in mode I fracture problems*, 38th Solid Mechanics Conference (SOLMECH 2012), *Varsovia*, POLONIA, 2012.
- GARCIA, P.A.; VERA, M. ; IGLESIAS, I. ; ZAERA, R.  
*Modelado del ánodo de una pila DMFC: flujo multifásico y efectos de la compresión no homogénea de ensamblaje* , CONAPPICE 2012 Congreso Nacional de Pilas de Combustible, *MADRID*, ESPAÑA, 2012.
- GINER, E.; FERNANDEZ , D.; FERNANDEZ-SAEZ, J. ; FERNANDEZ, A.  
*Análisis de la zona de constricción transversal en placas fisuradas de distintos espesores y comparación con el tamaño de zona plástica* ; en: anales de Mecánica de la Fractura , , 2012.

- LOYA, J. A. ; FERNANDEZ-SAEZ, J.  
*Fracture properties determination on PMMA beams in three-point bending tests*, 38th Solid Mechanics Conference (SolMech), Warsaw, POLONIA, 2012.
- MOURE, M.M.; SANTIUSTE, C. ; BARBERO, E.  
*On the modelling of ductile composite under low-velocity impact* , International Conference on Mechanics of Nano, Micro and Macro Composite Structures, Turín, ITALIA, 2012.
- OLMEDO, A.; SANTIUSTE, C. ; BARBERO, E.  
*Influence of out-of-plane stresses on failure prediction of composite bolted joints*, 15 th European Conference on Composite Materials (ECCM15), Venecia, ITALIA, 2012.
- PERNAS, J.; ARTERO, J.A.; VARAS, D. ; LÓPEZ-PUENTE, J.  
*Numerical Modeling of High Velocity Impacts on Composite Laminates*, International Conference on Mechanics of Nano, Micro and Macro Composite Structures, Turín, ITALIA, 2012.
- PERNAS, J.; ARTERO, J.A.; VARAS, D. ; LÓPEZ-PUENTE, J.  
*CFRP plates subjected to sphere ice* , International Conference on Mechanics of Nano, Micro and Macro Composite Structures, Turín, ITALIA, 2012.
- RODRÍGUEZ-MARTÍNEZ, J.A.; RUSINEK, A.; PESCI, R.; ZAERA, R.  
*Analysis of the Strain Induced Martensitic Transformation in Austenitic Steel Subjected to Dynamic Perforation*, 10th International Conference on the Mechanical and Physical Behaviour of Materials under Dynamic Loading, DYMAT 2012, Freiburg, ALEMANIA, 2012.
- RODRÍGUEZ-MARTÍNEZ, J.A.; RUSINEK, A.; PESCI, R.; ZAERA, R.  
*Experimental and numerical analysis on the martensitic transformation in AISI 304 steel sheets subjected to perforation by conical and hemispherical projectiles*, Technical University of Poznan-Workshop, Poznan, POLONIA, 2012.
- ZAERA, R.; RODRÍGUEZ-MARTÍNEZ, J.A.; RITTEL, D.  
*Modeling the train induced martensitic transformation under impact and its influence on the Taylor-Quinney coefficient*; en: Book of Abstracts of the 38th Solid Mechanics Conference, Institute of Fundamental Technological Research (IPPT) Polish Academy of Sciences, 2012.
- ZAHR, J.A.; PEREZ-CASTELLANOS, J. L.  
*Behavior of cohesive crack model in loading-unloading processes*, CIFIE2010, Oporto, PORTUGAL, 2010.
- ZAPITELLI, M.P.; BRAUN, M.; VILLA, E.I.; FERNANDEZ-SAEZ, J.; ROCCO, C.G.  
*Expresiones del factor de intensidad de tensiones para fisuras sometidas a la presión hidrostática en presas de hormigón*; en: Anales de Mecánica de la Fractura, Vol 29 , pp 713-718, 2012.

## **Actividades de formación y movilidad de personal investigador**

### **Estancias de investigadores externos en la universidad**

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