

**JOSÉ MARÍA GOICOLEA – SHORT CURRICULUM VITAE
(JANUARY 2011)**

Current Position: full professor, Department of Continuum Mechanics and Structures, School of Civil Engineering, Technical University of Madrid (Universidad Politécnica de Madrid, UPM)

Academic Titles: Civil engineer (Ingeniero de Caminos, Canales y Puertos), UPM, 1979

Ph.D. Engineering (University of London) - 1986

Doctor Ingeniero de Caminos (UPM) - 1987

Research lines: Computational mechanics; Structural dynamics; Biomechanics; Non linear finite element methods.

Research projects: 60, of which 18 obtained in public competitive calls (15 national and 3 international) and 44 R&D projects for companies or public administration. Five Recent most relevant projects as director and principal researcher:

- *Revision of the codes for actions on railway bridges and railway structures eurocodes*, for Spanish govt, ministry of public works (2010-11)
- *Biomechanics of human aorta: new analysis models and medical applications*, Ministerio de Ciencia e Innovación, ref. DPI2008-03130/DPI, Plan nacional de I+D+i 2008–11, 10/2008-10/2011
- *Study of medium and long-term behaviour of railway ballast and slab track structures (ref. PT-2006-024-19CCPM)*. Plan Estratégico de Infraestructuras de Transporte, Plan Nacional de Investigación 2004-07. Proyecto coordinado, liderado por la Universidad Politécnica de Madrid, participan: Universidades de Sevilla, País Vasco, Politécnica de Cataluña (CENIT), CEIT de San Sebastián y Fundación de Caminos de Hierro. Period: 12/2006 a 06/2009. No. of researchers: 25
- *Dynamic response of railway bridges for high-speed*. Spanish govt, ministry of public works 01-12/2002.
- *Development of a simulation system for arterial wall and blood flow in coronary arteries*. Ministerio de Ciencia y Tecnología, Plan Nacional I+D+I 2000-2003 - ref TIC2000-1635-C04-03, Subproyecto nº 3.

Papers in internationally indexed scientific journals: 17.

Some of the recent papers are detailed.

- GV Guinea, JM Atienza, FJ Rojo, CM Garcia-Herrera, Li Yiqun, E Claes, **JM Goicolea**, C García-Montero, RL Burgos, FJ Goicolea and M Elices: Factors influencing the mechanical behaviour of healthy human descending thoracic aorta. *Physiol. Meas.* 31 (2010) 1553–1565
- **Goicolea JM**: *Service limit states for railway bridges in new Design Codes IAPF and Eurocodes*. Track-Bridge Interaction on High-Speed Railways, Edited by R Calcada, R Delgado, A Campos e Matos, JM Goicolea, F Gabaldon, ISBN: 978-0-415-45774-3, Taylor and Francis (2008).
- **Goicolea JM**: *Design issues related to dynamic effects for high-speed railway bridges in Spain*. Dynamics of High-Speed Railway Bridges, Edited by R Delgado, R Calcada, JM Goicolea, F Gabaldon, ISBN: 978-0-415-46767-4, Taylor and Francis (2008) pp 13-24.
- Merodio J, **Goicolea JM**: On thermodynamically consistent constitutive equations for fiber-reinforced nonlinearly viscoelastic solids with application to biomechanics. *Mechanics Research Communications* (factor impacto 2006: 0.788; *Mechanics* 57/109) 34 568-578, oct 2007.
- Rodríguez J, **Goicolea JM**, Gabaldón J: A volumetric model for growth of arterial walls with arbitrary geometry and loads. *J. Biomechanics* (impact factor 2004: 1,911) 40, 961-971, 2007
- García-Garino C, Gabaldón F y **Goicolea JM**: *Finite element simulation of the simple tension test in metals*. *Finite Elements in Analysis & Design* (factor impacto 2004: 0,620), vol 42 pp 1187-1197, 2006
- Sanmartin M, Goicolea, FJ, Garcia C, Garcia J, Crespo A, Rodriguez J, **Goicolea JM**: *Influence of shear stress on in-stent restenosis: In vivo study using 3D reconstruction and computational fluid dynamics*. *Rev. Esp. Cardiología* 59/1 (2006) 20-27.
- **Goicolea JM**: *Factores biomecánicos y su influencia sobre la función cardiovascular* (comentario editorial). *Revista Española de Cardiología*, 2005 (factor impacto 2004: 1,802) 58(2) 121-125, Febrero 2005
- **Goicolea JM**, Navarro González-Valerio JA, Domínguez Barbero J, Gabaldón Castillo F: *Nuevos métodos de cálculo dinámico para puentes de ferrocarril en las instrucciones IAPF y Eurocódigo 1*. *Revista de Obras Públicas*. 2004

Congress papers: 84 (49 international, 35 national). 16 plenary invited conferences. The recent and most relevant ones are detailed.

- P Antolin, **JM Goicolea**, MA Astiz and A Alonso. *A methodology for analysing lateral coupled behavior of high speed railway vehicles and structures*. WCCM/APCOM Sydney 2010, IOP Publishing
- **JM Goicolea**, F Gabaldón, M Bermejo, C Vale, Cargas dinámicas en la estructura de vía debidas al tráfico de trenes de alta velocidad, Congreso de Métodos Numéricos en Ingeniería 2009, Barcelona, 29 junio al 2 de julio, SEMNI, 2009.
- R Dias, **JM Goicolea**, F Gabaldón, M Cuadrado, J Nasarre, P Gonzalez. «*A study of the lateral dynamic behaviour of high speed railway viaducts and its effect on vehicle ride comfort and stability*», Bridge Maintenance, Safety, Management, Health Monitoring and Informatics – Koh & Franopol (eds) 2008 Taylor & Francis Group, London, ISBN 978-0-415-46844-2.
- **J.M. Goicolea, F. Gabaldón**. «*Research Related to Vibrations from High Speed Railway Traffic*», Invited plenary speaker at international workshop Noise and Vibration on High Speed railways, FEUP, Oporto, Portugal, 2–3 oct 2008. Published in proceedings edited by R. Calçada, R. Delgado, A. Carvalho & Geert Degrande, ISBN 978-972-752-106-7, pp 105-127.
- **J.M. Goicolea**. «*El comportamiento dinámico de las estructuras ferroviarias principios y métodos de cálculo*», IAPF07 Instrucción de acciones en puentes de ferrocarril: principios, novedades y casos de aplicación, Colegio de Ingenieros de Caminos, Madrid 7 may 2008. Publicado en el libro de actas editado por Colegio de Ing. de Caminos y Fundación Caminos de Hierro, pp 145–169.
- **J.M. Goicolea**: «*The Establishment of Eurocode & Spanish Code for Dynamic Behavior of Railway Bridges*», 2nd Intl. Symposium on technological development of railway bridge, Korea railroad Research Institute, Seoul 25 oct 2007
- **J.M. Goicolea**, J. Rodríguez Soler: *Interpreting the mechanics of arterial wall tissue based on large strain anisotropic models with growth*. Euromech Colloquium 464 "Fibre-reinforced Solids: Constitutive Laws and Instabilities, Castro Urdiales, Spain, 28 sept - 1 oct 2004.
- **J.M. Goicolea**: *Physical Models for Cardiovascular Mechanics* (keynote lecture). presented at Physical Aspects of Multi-scale Modelling, International workshop organised by US Army Research Office, Bled, Slovenia, 13-15 sept 2004

Doctoral theses supervised: 6

- *Mechanical behaviour of the ascending aorta: experimental characterization and numerical simulation* (2008). Claudio García Herrera (sobresaliente cum laude, premio extraordinario doctorado UPM)
- *Numerical models for cardiovascular mechanics of aortic wall and its adaptation processes* (2003). Javier Rodríguez Soler, Sobresaliente cum laude, Premio extraordinario doctorado UPM
- *Dynamics of railway bridges for high speed: analysis methods and study of resonance* (2001) Jaime Domínguez Barbero. Sobresaliente cum laude, premio ANCI 2001 a la mejor tesis doctoral; Premio extraordinario doctorado UPM
- *Finite element methods with assumed strain fields in elastoplasticity* (1999). Felipe Gabaldón Castillo. Sobresaliente cum laude por unanimidad, premio extraordinario doctorado UPM
- *Nonlinear dynamics of flexible multibody systems with energy and momentum conserving algorithms* (1999). Juan Carlos García Orden. Sobresaliente cum laude, premio extraordinario de doctorado UPM.
- *Analysis of strain localisation phenomena in cohesive-frictional materials* (1993). Francisco Martínez Cutillas. Sobresaliente cum laude.

Other merits:

- President of the academic committee for doctorate, interdepartmental program at UPM *Engineering of Structures, Foundations and Materials*, seal of excellence by ministry of science and innovation (2007-2011).
- Member by election of executive committee and vice-president of the Spanish Society for Numerical Methods in Engineering (SEMNI). Member of the General Council of the International Assoc. for Computational Mechanics (IACM).
- President of organizing committee of international congresses:
 - Multibody Dynamics 2005 (ECCOMAS Thematic Conference) – International Conference on Advances in Computational Multibody Dynamics Madrid, jun 2005
 - V Congreso de métodos numéricos en ingeniería, Madrid, junio 2002.

- Reviewer for scientific journals: –Journal of Biomechanics, –Journal of Biomedical engineering (ASME) –Computer Methods in Applied Mechanics and Engineering (Elsevier) –Finite Elements in Analysis and design (Elsevier) –Multibody System Dynamics (Kluwer) –Revista Española de Cardiología (Sociedad española de cardiología)
- Associate editor of Revista Internacional de Métodos Numéricos en Ingeniería (Centro internacional de métodos numéricos en ingeniería)
- Coordinator for evaluation of scholarship applications for doctorate in Spanish universities (FPU), in the area of Civil Engineering and Architecture (2009-2011).
- Peer reviewer for Spanish agency of research projects ANEP, projects of national research plan areas (Ingeniería civil e infraestructura, Ingeniería mecánica, naval y aeronáutica), convocatorias 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010.
- Director by election of the department of Mechanics and Structures, in Universidad Politécnica de Madrid (1995-2004). Head of Research group in computational mechanics at UPM. (2000-).
- Member of jury for 29 PhD theses.
- Stage abroad of 3 years (1982-85) at King's College, University of London, research on numerical models for large strain plasticity with applications to tube collapse analysis