

Part A. PERSONAL INFORMATION

CV date 6/11/2018

First and Family name	José María Goicolea Ruigómez		
ID number (DNI Spain)	xxxxxxx	Age	63
Researcher numbers	Researcher ID	xxxxxxx	
	Orcid code	xxxxxxx	

A.1. Current position

Name of University	Universidad Politécnica de Madrid		
School and Department	Escuela de Ingenieros de Caminos, Canales y Puertos, Depto. De Mecánica de Medios Continuos y teoría de Estructuras		
Address and Country	Calle Prof. Aranguren 3, 28040 Madrid, Spain		
Phone number	xxxxxxx	E-mail	xxxxxxx
Current position	Professor (Catedrático Univ.)	From	16/06/1993
Spec. code UNESCO	2205 - MECHANICS		
Keywords	Computational mechanics, Finite Elements, Structural Dynamics, Biomechanics		

A.2. Education

Degree / PhD	University	Year
Ingeniero de Caminos, C. Y P.	Universidad Politécnica de Madrid	1979
PhD, Faculty of Engineering	University of London	1986
Doctor Ing. Caminos (conv.)	Universidad Politécnica de Madrid	1987

A.3. JCR articles, h Index, thesis supervised...

H index: 17 (13 since 2013), i10 index: 23 (16 since 2013), total cites 894 (510 since 2011). [Source: Google Scholar JM Goicolea](#). 3 "Sexenios" (6-year periods of accredited research), period of last one: 2007-2012, (next one due 2013-2018). 11 PhD theses supervised.

Part B. CV SUMMARY (max. 3500 characters, including spaces)

After my university degree and compulsory military service at the end of 1980, I worked as a structural engineer in 1981, developed my PhD thesis at the U. of London 1982-1984, started up PRINCIPIA Ingenieros Consultores where I worked 1985-1989, and for Pegaso and TGI advanced technology units 1990-1992. In this work I applied the results from my PhD research in international consultancy for KWU (Germany), ALCAN (UK research centre) among others.

I started in 1986 as part-time associate professor at UPM, in 1993 I obtained a permanent post as full professor in structural mechanics where I remain up to date. My research and teaching is centred in dynamics, computational mechanics and biomechanics. My early research interests were in nonlinear dynamics of solids. In 1997 I started work in dynamics of railway bridges needed for the new high speed lines, being commissioned by Spanish government to develop the new engineering code for actions and design criteria for railway bridges, and currently within the Eurocode groups in CEN TC250/SC1 and SC10. In 2000 I started a new research line in biomechanics of soft tissue in cardiovascular applications.

- *Research projects*: 68, of which 21 from public competitive calls
- *PhD Theses*: 11 theses as supervisor, 50 as member of jury or opponent.
- *Publications*: 25 papers in internationally indexed scientific journals, 15 chapters in books, 11 books authored or edited.
- *Congress papers and conferences*: 128 of which 25 plenary invited conferences
- *Other merits and positions*: President of the academic committee for doctoral studies, interdepartmental program at UPM for Engineering of Structures, Foundations and Materials, seal of excellence by ministry of science and innovation (2007-2013). 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). Reviewer for scientific journals: –Journal of Rail and Rapid Transport, –Computers and Structures, –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 (2009-2012). Peer reviewer for Spanish agency of research projects ANEP, projects of national research plan areas (Ingeniería civil e infraestructura, Ingeniería mecánica, naval y aeronáutica), calls from 2001-2012. 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–).

Part C. RELEVANT MERITS

C.1. Publications (including books)

31 internationally indexed papers. Selected relevant or recent papers are listed:

1. G Blanco, A Ye, X Wang, JM Goicolea: *Parametric Pushover Analysis on Elevated RC Pile-Cap Foundations for Bridges in Cohesionless Soils*. Journal of Bridge Engineering 24 (1), 2018.
2. M Bermejo, AP Santos, JM Goicolea: *Development of practical finite element models for collapse of reinforced concrete structures and experimental validation*. Shock and Vibration 2017 (2 cites).
3. K Nguyen, DI Villalmanzo, JM Goicolea, and F Gabaldon: *A computational procedure for prediction of ballasted track profile degradation under railway traffic loading*. Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, vol 230/8, 2016 (3 cites).
4. S Blanco, CA Polindara, JM Goicolea: *A regularised continuum damage model based on the mesoscopic scale for soft tissue*. International Journal of Solids and Structures 58, 20-33, 2015 (11 cites).
5. Nguyen K, Goicolea JM and Gabaldón, F: *Comparison of dynamic effects of high-speed traffic load on ballasted track using a simplified two-dimensional and full three-dimensional model*, Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, 2013 (22 cites)
6. Oliva J, Goicolea JM, Antolin P and Astiz M: *Relevance of a complete road surface description in vehicle–bridge interaction dynamics*, Engineering Structures 56, 2013 (26 cites)
7. Antolin P, Zhang N, Goicolea JM, Xia H, Astiz M and Oliva: *Consideration of nonlinear wheel-rail contact forces for dynamic vehicle-bridge interaction in high-speed railways*. Journal of Sound and Vibration, 2013 (51 cites).
8. H Xia, G de Roeck, JM Goicolea: *Bridge vibration and controls: new research* (Book). Nova Science Publishers, 2012 (47 cites).
9. Antolin P, Goicolea JM, Oliva J and Astiz M: *Nonlinear Train-Bridge Lateral Interaction Using A Simplified Wheel-Rail Contact Method Within a Finite Element Framework*. J of Computational and Nonlinear Dynamics, Vol 7-4, Oct 2012 (15 cites).
10. Goicolea JM and Antolín P: *The Dynamics of High-Speed Railway Bridges: A Review of Design Issues and New Research for Lateral Dynamics*. International Journal of Railway technology Vol 1(1), Apr 2012 (7 cites)
11. JM Goicolea, F Gabaldón, J Domínguez, JA Navarro: *Dynamic loads in new engineering codes for railway bridges in Europe and Spain*. Bridges for high-speed railways, pp 41-56, CRC Press, 2008 (18 cites)
12. J Rodríguez, JM Goicolea, F Gabaldón: *A volumetric model for growth of arterial walls with arbitrary geometry and loads*. Journal of biomechanics 40 (5), 961-971, 2007 (45 cites).
13. C García-Garino, F Gabaldón, JM Goicolea: *Finite element simulation of the simple tension test in metals*. Finite Elements in Analysis and Design 42 (13), 1187-1197, 2006 (66 cites).
14. JM Goicolea, JC García-Orden: *Dynamic analysis of rigid and deformable multibody systems with penalty methods and energy–momentum schemes*. Computer methods in applied mechanics and engineering 188 (4), 789-804, 2000 (51 cites).

C.2. Research projects and grants

67, of which 21 obtained in public competitive calls (18 national and 3 international). 5 recent most relevant projects:

- *Evaluación dinámica de puentes de ferrocarril; seguridad e interoperabilidad de estructuras existentes o renovadas*. BIA2015-71016-R, Plan estatal de I+D+I, 2016-2019 (head of research team)
- *Nuevos modelos de cálculo para las solicitaciones fluidodinámicas y el riesgo de rotura de la Aorta humana*. DPI2011-27609, Plan nacional de I+D+i, 2012-2015 (Head of research team)
- *Integration of monitoring of railway viaducts in an infrastructure management system (VIADINTEGRA)*. Ministry of Science and Innovation INNPACTO (2011-2012).
- *Biomecánica de la Aorta humana: nuevos modelos de cálculo y aplicaciones médicas (AORMEF)*, DPI2008-03130/DPI, Plan nacional de I+D+I, 2008- 2012 (Head of research team)
- *Study of medium and long-term behaviour of railway ballast and slab track structures (ref. PT-2006-024-19CCPM)*. Strategic research program for transport infrastructure. Project leader as UPM with 5 more universities and research centres, from 12/2006 to 06/2009. No. of researchers: 25

C.3. Contracts

46 R&D projects for companies or public administration, 4 selected recent projects:

- *Project Team SC10.T2 for revision of Eurocode EN 1990 Annex A2 (design bases for bridges)*, for European Committee for Standardization CEN under competitive call, M/515 Mandate, 2017-2020.
- *Project Team SC1.T9 for revision of Eurocode EN 1991-2 (traffic actions on bridges)*, for European Committee for Standardization CEN under competitive call, M/515 Mandate, 2015-2018.
- *Participation in European expert groups for railway structures within CEN/TC250/SC1/WG3 and TC256 for revision of EN1991-2, EN15528 and structures subgroup at European Railway Agency for TSI-Infrastructures*; Commissioned by Spanish government and standards body UNE (2010-2018).
- *Revision of national codes for actions on railway bridges and National Annexes for railway structures Eurocodes*, for Spanish govt., ministry of public works (2010-12)
- *Dynamic analysis of numerous bridges for HS railways*, for several Engineering Companies INECO, IDEAM, Torroja, TALGO, PRAINSA (1996-2002)
- *Dynamic response of railway bridges for high-speed*. Spanish govt, ministry of public works 01-12/2002.

C.4. Patents

- CALDINTAV 3.0: JM Goicolea, P Antolín, J Domínguez, K Nguyen, C Velarde, Software for dynamic analysis of railway bridges (2018)
- PRPgenerator: J Oliva, P Antolín and J Goicolea, Software for generation of synthetic profiles of irregularities in road pavement (2013)
- CALDINTAV: P Antolín, T Ancochea, JM Goicolea, J Domínguez, Software for dynamic analysis of railway bridges (2013)

C.5. PhD Theses supervised

(11 theses, the 5 more recent are included below)

1. *A study of the mechanical behaviour of the human aortic artery by means of non-linear finite element models*. César Polindara, 03/02/2016, advisors J.M. Goicolea and S. Blanco. Awards: cum laude.
2. *Modelos de elementos finitos explícitos para explosiones en estructuras reticuladas de*

hormigón armado. Aplicaciones al estudio del colapso de edificios. Mario Bermejo, 15/01/2016, Directores J.M. Goicolea y A. Santos. Awards: cum laude.

3. [Efectos dinámicos debidos al tráfico de ferrocarril sobre la infraestructura de vía y las estructuras](#) (co-supervised with F. Gabaldón), Khanh Nguyen Gia. 3 jul 2013. Awards: cum laude.
4. [Efectos dinámicos laterales en vehículos y puentes ferroviarios sometidos a la acción de vientos transversales](#), (co-supervised with M.A. Astiz) P. Antolín 24 jul 2013. Awards: cum laude, ANCI 2013 accesit for best thesis in Spain for construction technology, Entrecanales best thesis in civil eng., UPM exceptional thesis award.
5. [Estudio de la estabilidad del tráfico en puentes de carretera Influencia del viento lateral \(2011\)](#), J. Oliva, Excellent cum laude (co-supervised with M.A. Astiz). Awards: cum laude, ANCI 2011 best thesis in Spain for construction technology, UPM exceptional thesis award.

C.6. Other Merits: Institutional responsibilities, memberships of scientific societies...

- President of the Spanish Standards UNE CTN140 committee for Eurocodes for structures, 2018-
- President of the Spanish Standards UNE CTN140/SC1 subcommittee for actions on structures and design bases, 2015-
- 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 (2007-2014).
- 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.
- Editorial board of: International Journal of Railway Transport, International Journal of Railway technology. Associate editor for Revista internacional de Métodos Numéricos en Ingeniería (CIMNE)
- Reviewer for scientific journals: –Journal of Rail and Rapid Transport, -Computers and Structures, –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)
- Coordinator for evaluation of scholarship applications for doctorate in Spanish universities (FPU), in the area of Civil Engineering and Architecture (2009-2012).
- Peer reviewer for Spanish agency of research projects ANEP, projects of national research plan areas (Ingeniería civil e infraestructura, Ingeniería mecánica, naval y aeronáutica), calls from 2001-2012.
- 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 50 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