

Part A. PERSONAL INFORMATION
CV date

05/09/2019

First and Family name	Antoni CLADERA-BOHIGAS		
Social Security, Passport, ID number	43.054.497-S	Age	44
Researcher numbers	Researcher ID	A-6009-2012	
	Orcid code	0000-0001-7308-8240	

A.1. Current position

Name of University/Institution	Universitat de les Illes Balears (<i>University of Balearic Islands</i>)		
Department	Física (<i>Physics Department</i>)		
Address and Country	Ctra. Valldemossa km 7.5 – 07122 Palma – Illes Balears		
Phone number	971 17 1378	E-mail	antoni.cladera@uib.es
Current position	Catedrático de Universidad (<i>Professor</i>)	From	23/01/2017
Espec. cód. UNESCO	330532 – Structural engineering, 531203 – Construction		
Palabras clave	Structural engineering, reinforced and prestressed concrete, shape memory alloys, shear strength, code provisions.		

A.2. Education

Degree	University	Year
Civil Engineer (Degree and MSc)	Universidad Politécnica de Cataluña	1999
PhD in Construction Engineering	Universidad Politécnica de Cataluña	2003

A.3. Indicators of Quality in Scientific Production

Publications: 43 papers in scientific journals, 29 in indexed journals. 1st quartile (Q1): 18.

Assessment of research activity: 3 periods of 6 years (*sexenios*) with positive assessment: 2001-2018 uninterrupted.

h-index: 14 (Web of Science) - 16 (Scopus) - 20 (Google Scholar).

Total number of citations: 696 (Web of Science) - 840 (Scopus) - 1399 (Google Scholar).

Average number of citations during last 5 years: 80 (Web of Science) - 107 (Scopus) - 167 (Google Scholar).

Director of 3 PhD thesis (2 at Construction Engineering Program, UPC, and 1 at Physics Program at UIB).

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

Civil Engineer, MsC, and Doctor in Construction Engineering from the Polytechnic University of Catalonia (2003, Outstanding Doctorate Award). I taught at the UPC from 2001 to 2003, when I joined UIB. Associate Professor in the area of Construction Engineering (accredited for Full Professor by ANECA since April 2018), I teach in the Degree in Building Engineering, Degree in Food and Agriculture Engineering and the Rural Environment, Master in Industrial Engineering, and Master in Agronomic Engineering. My research focuses on structural engineering. I have published more than 55 papers and collaborations in books or codes of practice, and more than 90 conference participations. My research currently focuses on the study of the applications of shape memory alloys in structural engineering, in special for strengthening or reinforcing structural concrete members in front of the Ultimate and Serviceability Limit States.

I have collaborated in the Spanish Structural Concrete Code (2008) and, in terms of technology transfer, with different companies and institutions from Spain, and from the Balearic Islands. I took part of the Task Group CEN/TC 250/SC 2/WG 1/TG4 for the Eurocode 2 revision. I am

also a member of fib WP 2.2.1 'Shear in beams', and ACI/ASCE Committee 445 'Shear and Torsion'.

I have participated in research projects continuously since 2000, highlighting 5 projects of the Spanish National Plan and 3 projects funded by the Government of the Balearic Islands. I have been the Principal Investigator (PI) in the last 3 projects of the Spanish National Plan in which I have participated (2007-2011, 2013-2015, 2016-18). The first of them (BIA2007) was focused on the structural behaviour of precast members made with different concrete technology (reinforced and prestressed) at the same cross-section. The other two projects were related to the application of shape memory alloys to structural engineering, as shear internal reinforcement (BIA2012) and as external strengthening (BIA2015). In June 2018 I have been granted a Leonardo Fellowship project entitled "Shear strengthening of full scale beams using iron based shape memory alloys". This is a very competitive call oriented to innovation and excellence.

Since June 2018, I am the coordinator of the full PhD program in Physics at UIB. I was deputy director of the Department of Physics (2007-2008), director of the Chair Foundation Miquel Llabrés Feliu (2007-2010), and Associate Vice Chancellor for University Infrastructures at UIB (2008-2012). In June 2017 I became the Scientific Chair of the VII ACHE Conference in Spain and, currently, I am Vice-president of the Spanish Association of Structural Engineering (ACHE). Founding member of Engineers Without Borders in the Balearic Islands, organization presided by me between 2007 and 2012.

I have received different awards during my research carrier, highlighting the award for the best research paper published between 2014-2016 in journal *Hormigón y Acero* related to a bending/shear mechanical model developed by UPC and UIB, and the Mirko Ros medal (Empa) for the best paper in SMAR2015 in the field of intelligent structures. Previously, I had been awarded by the Civil Engineering School of Barcelona for the Best Doctoral Thesis of 2003, second prize (*Accesit*) in the Young Engineer award of the Professional Association of Civil Engineers in 2007, and nominated by the journal *Engineering Structures* for the "Munro prize" for two published papers in 2004.

Part C. RELEVANT MERITS

C.1. Publications

Rius, J. M., Cladera, A., Ribas, C., & Mas, B. (2019). Shear strengthening of reinforced concrete beams using shape memory alloys. *Construction and Building Materials*, 200, 420-435.

Marí, A., Cladera, A., Oller, E., & Bairán, J. M. (2018). A punching shear mechanical model for reinforced concrete flat slabs with and without shear reinforcement. *Engineering Structures*, 166, 413-426.

Mas, B., Biggs, D., Vieito, I., Cladera, A., Shaw, J., & Martínez-Abella, F. (2017). "Superelastic shape memory alloy cables for reinforced concrete applications" *Construction and Building Materials*, 148, 307-320.

Cladera, A., Marí, A., Bairán, J. M., Ribas, C., Oller, E., & Duarte, N. (2016). "The compression chord capacity model for the shear design and assessment of reinforced and prestressed concrete beams" *Structural Concrete*, 17(6), 1017-1032.

Mas, B., Cladera, A., & Ribas, C. (2016). "Experimental study on concrete beams reinforced with pseudoelastic Ni-Ti continuous rectangular spiral reinforcement failing in shear" *Engineering Structures*, 127, 759-768.

Cladera, A., Marí, A., Ribas, C., Bairán, J., & Oller, E. (2015). "Predicting the shear-flexural strength of slender reinforced concrete T and I shaped beams" *Engineering Structures*, 101, 386-398.

Marí, A., Bairán, J., Cladera, A., Oller, E., & Ribas, C. (2015). "Shear-flexural strength mechanical model for the design and assessment of reinforced concrete beams" *Structure and Infrastructure Engineering*, 11(11), 1399-1419.

Cladera, A., Weber, B., Leinenbach, C., Czaderski, C., Shahverdi, M., & Motavalli, M. (2014). Iron-based shape memory alloys for civil engineering structures: An overview. *Construction and Building Materials*, 63, 281-293.

Marí, A., Cladera, A., Oller, E., & Bairán, J. (2014). Shear design of FRP reinforced concrete beams without transverse reinforcement. *Composites Part B: Engineering*, 57, 228-241.

Ribas, C., and Cladera, A. (2013). Experimental study on shear strength of beam-and-block floors. *Engineering Structures*, 57, 428-442.

C.2. Research projects and grants

Leonardo Fellowship "Shear strengthening of full scale beams using iron based shape memory alloys", 2018-2020. IP: Antoni Cladera. BBVA Foundation. Amount: 35,000 €.

BIA2015-64672-C4-3-R "Development of strengthening techniques with advanced materials for concrete structures and their mechanical behaviour models to extend their lifetime", 2016-2018. PI: Antoni Cladera and Carlos Ribas. Ministerio de Economía y Competitividad (MINECO) and FEDER. Amount: 118,580 €. Full time. Number of researchers: 5.

BIA2012-31432 "Intelligent materials in structural concrete. Application of Shape Memory Alloys as shear reinforcement of linear members", 2013-2015. PI: Antoni Cladera. Ministerio de Economía y Competitividad (MINECO) and FEDER. Amount: 142,740 €. Full time. Number of researchers: 6.

BIA2007-60197 "Serviceability behaviour and strength of composite elements with different concretes constructed evolutionarily. Application to floor systems and beams for buildings", 2007-2011. PI: Antoni Cladera. Ministerio de Ciencia e Innovación. Amount: 70,180 €. Full time. Number of researchers: 5.

PROGECIB-43A "Improvement of the environmental sustainability of hotel buildings through the analysis of their life cycle", 2007-2009. PI: Víctor Martínez Moll (UIB). Conselleria d'Economia, Hisenda i Innovació. Govern de les Illes Balears. Amount: 28,000 €. Member of the research team. Number of researchers: 5.

C.3. Contracts

"Study of the cracks in the slab of the MA-20 link with MA-3018 and proposed actions for its restoration". Melchor Mascaró SAU. 2015. Amount: 4,840 €

"Assessment of a bridge in the Vía de Cintura over the Palma-Inca railway and restoration proposal". UTE Eix Ponent-Llevant. 2010-13. Amount: 8,924 €

"Research of the causes of collapse of a wall on the Enllaç-Manacor railway line. Consulting services in repair proposal" Serveis Ferroviaris de Mallorca. 2010. Amount: 12,760 €

"Research on the structural deficiencies of a bridge in the Manacor railway line and visual inspection of 4 similar structures" Serveis Ferroviaris de Mallorca. 2010. Amount: 4,060 €.

"Feasibility study for the reuse in road works of recycled aggregates produced in the construction and demolition waste treatment plants". Actua Desenvolupament. 2009. Amount: 9,500 €.

"Causes of the collapse of a precast beam during the construction of a sport center and structural revision of the roof". 2008. Nuevo Ágora Centro de Estudios SL. Amount: 6,960 €.

"Collaboration agreement between Pastor S.A. and the Universitat de les Illes Balears for the development of new precast products". 2004-2007. Amount: 44,062 €.

C.4. Patents

ES2592554 (B1). Cladera, Antoni; Ribas, Carlos; Mas, Benito; Rius, Juan Maria. "Active strengthening method for shear forces or punching shear in structural supporting elements, and active strengthening systems (in Spanish)", Spain. UIB, 2016. Patent.

ES2017/070675. Application for international PCT extension. Resolution pending. The inventors of the PCT extension are: Cladera, Antoni; Ribas, Carlos; Mas, Benito; Rius, Juan Maria; Ruiz Pinilla, J.; Montoya, L.

C.5. Research stays abroad

Empa (Swiss Federal Laboratories for Materials Science and Technology), Zurich (Switzerland). Research related to the application of iron based shape memory alloys to structural engineering. 2013 (3 months). Supervisor: Dr. Christoph Czaderski.

University of Toronto, Department of Civil Engineering (Canada). 2001 (3 months). Research related to shear strength of RC beams, including beams reinforced with glass FRP bars. Supervisor: Prof. M.P. Collins.

C.6. Memberships of international scientific committees

CEN/TC 250/SC 2/WG 1/Task Group 4 'Shear Punching Torsion (European Committee for Standardization -CEN). Since May 2012. Convenor: J. Hegger.

ACI-ASCE 445 - Shear and Torsion (American Concrete Institute). Since October 2014. Convenor: A. Belarbi.

ACI-DAfStb 445-D Shear databases (American Concrete Institute). Since October 2014. Convenor: K.H. Reineck.

ACI-DAfStb 445-C Shear & Torsion – Punching shear (American Concrete Institute). Since October 2014. Convenor: C. Ospina.

fib Working Party 2.2.1: Shear in beams (fédération internationale du béton). Since November 2013. Convenor: Ozzie Bayrak.

AEN/CTN 140/SC-2 (AENOR). Spanish mirror group for new generation of Eurocodes. Since May 2012. Convenor: Jesús Rodríguez.

C.7. Awards (last 5 years)

Award for the best research paper published between 2014-2016 in journal Hormigón y Acero (Concrete and Steel) published by ACHE and Elsevier. Reference of winner paper: Marí, A., Cladera, A., Bairán, J., Oller, E., & Ribas, C. (2014). A unified shear-flexural strength model for slender reinforced concrete beams under concentrated and distributed loads (in Spanish). Hormigón y Acero, 65(274), 247-265.

Mirko Ros medal winner for the best paper in SMAR2015 (Antalya on 7-9 September 2015) in the field of monitoring and intelligent structures: 'Paper 63 - Ductile Shear Failure in RC Beams with Pseudoelastic Ni-Ti Spirals. Authors: Benito Mas, Antoni Cladera, Carlos Ribas and Eva Oller. Communication presented by Antoni Cladera.