

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name			
Family name			
Gender (*)		Birth date (dd/mm/yyyy)	
ID number			
e-mail		URL Web:	
Open Researcher and Contributor ID (ORCID)			

(*) *Mandatory*

A.1. Current position

Position	Full professor		
Initial date	19/03/2019		
Institution	Universitat de les Illes Balears		
Department/Center	Industrial and Construction Engineering		
Country	Spain	Teleph. number	
Key words	Structural engineering; reinforced concrete; shear strength; assessment; strengthening; shape memory alloys; codes.		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2007-2019	Associate professor/ Universitat de les Illes Balears/ Spain
2003-2007	Lecturer (collaborator professor)/ Universitat de les Illes Balears/ Spain
2001-2003	Lecturer (assistant professor)/ Universitat Politècnica de Catalunya/ Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Phd in Construction Engineering	Universitat Politècnica de Catalunya/Spain	2003
Civil Engineer (MsC and grade)	Universitat Politècnica de Catalunya/Spain	1999

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Scientific contributions are related to structural engineering with three main focus over the last 10 years. The primary focus at this moment is on the performance of existing structures with **corroded reinforcement**, aimed at extending the lifespan of existing buildings or infrastructures. This research line started at 2022, and he currently works within the framework of two granted research projects and has already published 3 papers in indexed journals.

The second main field is the development of mechanical models for the shear strength prediction of reinforced and prestressed concrete elements, validated for steel, **FRP**, rectangular and T- cross sections, fiber reinforced concrete, and **fatigue**. The main contribution of this mechanical model is to highlight the importance of the compression zone in the shear resisting actions. This work has been disseminated through more than 15 papers in JCR indexed journals.

The third research focus is the application of **shape memory alloys (SMAs)** in structural engineering, with emphasis on strengthening and Fe-based SMAs. He has published 10 papers in JCR-indexed journals in this field. Some of these alloys are currently being used in real construction projects, especially in Central Europe, with more than 50 real strengthening projects carried out. Dr. Cladera, and his team, are one of the most active groups worldwide in this topic. The research on these three fields has been funded over the last 10 years for a total amount of 731.786 €, without including grants to Master or PhD students. He has been the Principal Investigator of six consecutive projects funded by the Spanish Government since 2007 until now, various regional government projects (Balearic Islands), and of the prestigious

Leonardo grant from the BBVA Foundation in 2018, a highly competitive call, with less than 5% of successful proposals, seeking innovative and high-risk projects.

He has carried out research stays at the University of Toronto (Canada) and at EMPA (Swiss Federal Laboratories for Materials Science and Technology). He is a member of different specialized international networks, for example the working group WP 2.2.1 'Shear in beams' of the fib and the ACI/ASCE Committee 445 'Shear and torsion'. Dr. Cladera has collaborated with different private companies and public institutions from Spain in terms of technology transfer, with more than 25 contracts. This technology transfer activity was awarded with a six-year positive evaluation (period 2004-2009) in the unique call of this type in Spain. He also collaborated in the Spanish Structural Concrete Code (2008) and participated in the procedures for updating the shear strength models in Eurocode 2 and ACI 318-19. He is a co-inventor of the patent "Method for shear or punching active strengthening in structural resistant members, and its system".

He co-founded the YouTube teaching channel '[Ingenia](#)', specialized in structural engineering, which has accumulated more than 1,600,000 views and 17,500 subscriptions, most of them from professionals seeking continuous training.

With extensive experience in academic management, he currently holds the position of Deputy Director of the Department of Industrial Engineering and Construction since 2020. Previously, he has held other management positions, such as Coordinator of the Academic Committee of the Doctoral Program in Physics at UIB (2018-2021), Associate Vice-Rector for University Infrastructures (2008-2012), Deputy Director of the Department of Physics (2007-2008), and Director of the Miquel Llabrés Feliu Foundation Chair (2007-2010). He has also managed associations outside the university, currently being part of the Council of the Spanish Association of Structural Engineering (ACHE), where he served as vice president between 2017 and 2022. He was also a founding member of Engineering Without Borders in the Balearic Islands, an organization he led (2007-2012). He has served as a civil engineer in Guinea-Conakry, Niger, Togo, India, Paraguay, El Salvador and East Timor.

He has also collaborated in publishing activities, being a member of the Editorial Advisory Board of "Structural Concrete" (fib journal – JCR indexed) and a member of the Editorial Board of "Hormigón y Acero" (ACHE journal, included in the Expanded SCI).

Summary of scientific production/quality indicators (March 2024):

- 3 consecutives recognized 'six-years research periods' (*sexenios*) and 1 technology transfer period.
- h-index = 30 (Google Scholar) - h = 26 (Scopus).
- 3375 citations (Google Scholar) – 2235 citations (Scopus).

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*maximum of 10 relevant papers*)

del Río-Bonnín, S., Cladera, A., Montoya-Coronado, L. A., Ruiz-Pinilla, J. G., & Ribas, C. (2024). Experimental study on the active continuity of HCS structural floors using Iron-based Shape-Memory Alloy rebars. *Engineering Structures*, 299, 117111. <https://doi.org/10.1016/j.engstruct.2023.117111>

Montoya-Coronado, L. A., Ribas, C., Ruiz-Pinilla, J. G., & **Cladera, A.** (2023). Time-history analysis of aggregate interlock in reinforced concrete beams without stirrups. *Engineering Structures*, 283, 115912. <https://doi.org/10.1016/j.engstruct.2023.115912>

Frontera, A., & Cladera, A. (2023). Long-term shear strength of RC beams based on a mechanical model that considers reinforcing steel corrosion. *Structural Concrete*, 24(1), 25-40. <https://doi.org/10.1002/suco.202200428>

Ruiz-Pinilla, J. G., Cladera, A., Pallarés, F. J., Calderón, P. A., & Adam, J. M. (2022). Joint strengthening by external bars on RC beam-column joints. *Journal of Building Engineering*, 103445. <https://doi.org/10.1016/j.jobbe.2021.103445>

Cladera, A., Marí, A., & Ribas, C. (2021). Mechanical model for the shear strength prediction of corrosion-damaged reinforced concrete slender and non slender beams. *Engineering Structures*, 247, 113163. <https://doi.org/10.1016/j.engstruct.2021.113163>

Cladera, A., Montoya-Coronado, L. A., Ruiz-Pinilla, J. G., & Ribas, C. (2020). Shear strengthening of slender reinforced concrete T-shaped beams using iron-based shape memory alloy strips. *Engineering Structures*, 221, 111018. <https://doi.org/10.1016/j.engstruct.2020.111018>

Cladera, A., Ribas, C., Oller, E., & Marí, A. (2020). Shear fatigue strength of reinforced concrete members without transverse reinforcement according to the compression chord capacity model. *Eng. Structures*, 211, 110495. <https://doi.org/10.1016/j.engstruct.2020.110495>

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. <https://doi.org/10.1016/j.conbuildmat.2017.05.041>

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. <https://doi.org/10.1002/suco.201500214>

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. <https://doi.org/10.1080/15732479.2014.964735>

C.2. Congress, indicating the modality of their participation.

Frontera, A.; Cladera, A., Ruiz, J.; Ribas, C. "Time-dependent shear strength of reinforced concrete beams under chloride-induced corrosion". *fib CACRCS Days 2023 - Capacity Assessment of Corroded Reinforced Concrete Structures* (Organized by fib, aicap and cte), Parma, Italy, 2023. Oral presentation – Member of the Scientific Committee.

Cladera, A.; Montoya-Cornado, L.; Ruiz-Pinilla, J.; Ribas, C. "Discussion on shear strength models for RC beams with apparent contradictory initial hypotheses through Digital Image Correlation". *CMMoST 2023 - 7th International Conference on Mechanical Models in Structural Engineering*, Málaga, Spain, 2023. Oral presentation – Member of the Scientific Committee.

Cladera, A. "Recent Research and Applications of Iron-Based Shape Memory Alloys for Concrete Structures in Europe. In *Concrete Olympics. Design, Construction, Evaluation, and Repair of Concrete Bridges and Structures with Members of the ACI, KCI, TCI, and FIB*. ACI Fall Convention, Dallas, United States, 2022. Invited presentation.

Cladera, A.; Montoya-Coronado, L.; Ruiz-Pinilla, J.; Ribas, C. "Refuerzo externo a cortante en vigas de hormigón mediante aleaciones con memoria de forma en base hierro: de la prueba de concepto a la escala real". *VIII Congreso Internacional de Estructuras de ACHE*, Santander, Spain, 2022. Oral presentation – Member of the Scientific Committee.

Cladera, A., Frontera, A., Ribas, C., Ruiz-Pinilla, J.G, Marí, A., "Mechanical model for the long-term shear strength prediction of corrosion-damaged reinforced concrete beams" *3rd CACRCS Workshop Capacity Assessment of Corroded Reinforced Concrete Structures*, 30/11/2021-03/12/2022, Oral presentation, On-line (organized by CTE-Italy, supported by fib)

Montoya, L.; Ruiz-Pinilla, J.; Ribas, C.; Cladera, A. "Shear strengthening using external Fe-SMA strips". *SMAR 2019 - 5th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures*, Potsdam (Germany) 2019. Oral presentation and Member of the Scientific Committee.

Cladera, A.; Rius, J.; Ribas, C. "Shear strengthening of RC members using SMAs. Towards a more ductile shear failure" *ACI Spring Convention*, Detroit (USA), 2017. Oral presentation.

Rius, J.; Cladera, A.; Ribas, C.; Mas, B. "Active shear strengthening of RC beams using shape memory alloys". *SMAR 2017 – 4th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Struct.*, Zurich (Switzerland), 2017. Oral presentation.

Cladera, A.; Marí, A.; Bairán, J. "One-way Shear Design Method Based on a Multi-Action Model" In Hot Topic Session II: New One-Way Shear Equations for the 318 Building Code, Is It Time? *Spring ACI Concrete Convention*, Milwaukee (USA), 2016. Invited presentation.

Mas, B.; Cladera, A.; Ribas, C.; Oller, E. "Ductile shear failure in RC beams reinforced with pseudoelastic Ni-Ti spirals". *SMAR2015 - The 3rd Conference on Smart Monitoring, Assessment and Rehabilitation of Structures*, Antalya (Turkey), 7-9 September 2015. Oral presentation: **Mirko Ros Medal (award to best paper in monitoring and smart structures)**.

C.3. Research projects (relevant last 10 years)

PID2021-123701OB-C22: "Resilience of existing reinforced concrete infrastructures under deterioration and climate change risks (RESTART-R)", 2022-2025. Pls: Antoni Cladera and Carlos Ribas. Programa estatal de fomento de la investigación científica y técnica de excelencia. Subprograma Estatal de generación de conocimiento. Ministerio de Ciencia e Innovación (MICINN). Amount: 158.026,00 €.

TED2021-130272B-C22: "Evaluación digitalizada de la resistencia a cortante de estructuras de hormigón, y del refuerzo externo, para alargar su vida útil (ReINfoRCeD-UIB)", 2022-2024. Main researcher: Carlos Rodrigo Ribas González; Joaquín Guillermo Ruiz Pinilla. Proyectos Estratégicos Orientados a la Transición Ecológica y a la Transición Digital. Ministerio de Ciencia e Innovación (MICINN). Amount: 111.320,00€.

PDR2020/39: "Development of a strengthening technology for bending based on iron-based shape memory alloys (Fe-SMA), optimized for its use with cyclic loads, for existing concrete touristic infrastructures". 1/12/2021-30/10/2024. Pls: Antoni Cladera; Joan Torrens. Projectes de recerca 20-24. Govern de les Illes Balears. Amount: 106,321€

RTI2018-099091-B-C22: "Continuity of hollow core slab structural floors using shape memory alloys to improve the sustainability and safety of precast concrete infrastructures, MAPREJOINT-SP2", 1/1/2019-30/09/2022. Pls: Antoni Cladera; Carlos Ribas. Ministerio de Ciencia, Innovación y Universidades. Amount: 164,560.00 €

Leonardo Fellowship: "Shear strengthening of full-scale beams using iron-based shape memory alloys", 15/09/2008-30/03/2020, PI: Antoni Cladera. BBVA Foundation. 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", 01/01/2016-31/12/2019. Pls: Antoni Cladera and Carlos Ribas, Universitat de les Illes Balears (coordinated with 3 other universities: UPC, UPV, UdC). Ministerio de Economía y Competitividad (MINECO) and FEDER. Amount: 118,580 €.

C.4. Contracts, technological or transfer merits.

Scientific or technical consultancy contract between Construcciones Lull Sastre - Melchor Mascaró and the Fundació Universitat-Empresa de les Illes Balear (Analysis of the service life of the foundation of the Panorama Building in Portals), 2022. PI: A. Cladera. Amount: 4,332 €

Scientific or technical advice contract between Club de Mar-Mallorca and the Fundació Universitat-Empresa de les Illes Balears (Analysis of the anomalies detected in the production of concrete and their implications at structural level and durability in the works of the Club de Mar), 2021. Principal investigator: A. Cladera. Amount: 4,840 €.

Monitoring of compressive stresses and strains of 4 steel bars during on-site testing (Son Quint-Palma Building), for the vertical displacement of a complete 4-storey building. Desarrollos Constructivos de Viviendas, S.L. 2018. PI: A. Cladera. Amount: 1,754.50 €.

Report on structural damages observed in the Gaspar Melchor de Jovellanos building. University of the Balearic Islands. 2019. PI: A. Cladera. Amount: 2,500 €.

Patent ES2592554 (B1) - Cladera, A.; Ribas, C.; Mas, B.; Rius, J. " Method for shear or punching active strengthening in structural resistant members, and its system", Spain. 2016.

Report on the cracking appeared in the concrete slab of the tunnel between road MA-20 and MA-3018 and proposal of actions for its repair. Melchor Mascaró SAU. 2015. PI: A. Cladera. Amount: 4840 €

Report on pathologies and repair proposal of the Vía de Cintura bridge over the Palma - Inca railway. UTE Eix Ponent-Llevant. 2010-2013. PI: A. Cladera. Amount: 8,923.75 €