



Part A. PERSONAL INFORMATION

CV date	June 2023
---------	-----------

First name	Beatriz		
Family name	López Boada		

e-mail	bboada@ing.uc3m.es	URL Web	https://researchportal.uc3m.es/display/inv15525
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-8061-068X		

(*) Mandatory

A.1. Current position

Position	Full Professor		
Initial date	23/12/2019		
Institution	University Carlos III de Madrid		
Department/Center	Mechanical Engineering		
Country	Spain	Teleph. number	+34916249168
Keywords	Vehicle Dynamics, Vehicle Safety, Vehicle Control, Kalman Filter, System Dynamics Modeling, Sensor Fusion, robust observers, robust control, Fuzzy Logic, MR dampers, bus structures, Artificial Neural Networks, Networked Control Systems, active suspensions		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
01/01/1997-30/11/200	FPI GRANT of the Spanish Ministry //UC3M/Spain
01/12/2000-28/02/2006	Teaching Assistant /UC3M/Spain
01/03/2006-16/07/2006	Lecturer /University Carlos III de Madrid/Spain
18/07/2006-06/11/2007	Interim Associate Professor /UC3M/Spain
07/11/2007-22/12/2019	Associate Professor /UC3M/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Industrial Engineering	University Carlos III de Madrid	1996
PhD in Industrial Technologies	University Carlos III de Madrid	2002

Part B. CV SUMMARY

I am Full Professor in the Mechanical Department of UC3M since December of 2019. My **research activity** is **focused** on vehicle dynamics, on designing of vehicle controllers to improve their handling, stability and comfort, on designing vehicle state observers, on mechatronics and on Artificial Intelligence such as Neural Networks and Fuzzy. My research has been conducting inside different research projects. The total number of **research projects** in which I have participated has been 14: 1 European Project, 11 national projects and 4 regional projects. I have been **principal researcher** of 2 national Projects and 4 regional projects. All of them have been related to vehicle safety. Additionally, I am principal researcher of the project "New paradigm of emergency transport service management: Ambulances (AMBULATE-CM)", recently accepted. This is financing by Comunidad de Madrid. FEDER – RECURSOS REACT-UE and funding with **1.055.000,001 euros**. My research has generated more than 90 publications, 36 of which are journal articles belongs to JCR, 54 are conferences and 3 are international research book chapters. The total **funds received** as a **principal research** are about 1.300.000 euros.

The indicators of my **research performance** are (source WoS): **Total cites: 828; 5-years Average citations (2022-18): 99 and h-index: 15**. Additionally, I am among the 2% world's most cited in 2021 in my respective field (Automotive Design & Engineering)



(<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3>), according to the Ranking of World Scientists carried out by the University of Standford. Number of sexenios (evaluation of the research activity) 3. Number of quinquenios (evaluation of the teaching activity) 5. From 2011 to 2019 I have been Director of the PhD Programme in Mechanical Engineering and Industrial Organization and from 2014, I am co-director of the Master in Railway Systems Engineering UC3M-Alstom. Since May of 2023, I am Vice-rector for Sustainable Development, Cooperation and Healthy Campuses.

I made/make **international collaborations** with the following institutions: Birmingham University (UK), University "POLITEHNICA" of Bucharest (Romania), Polytechnic Institute of Castelo Branco (Portugal), University of Beighan (China), Pontificia Universidad Católica del Perú (Perú), The Pennsylvania State University (USA) and and Université Polytechnique Hauts-de-France (France).

From 2021, I am a member of the European Co-Programmed Association (**CCAM**). The goal of CCAM is to create a more user-centered and inclusive mobility system, increasing road safety while reducing congestion and environmental footprint.

I have participated in **contracts** belonging to **article 83** and **MARCO agreement** with different enterprises (Indra, FITSA, Michelin España Portugal, S.A., Recreativos Franco S.A., Construcciones Espaciales y Dragados S.A., CAF, METRO de Madrid).

I am **co-inventor** of the **patent** "System and Procedure for Evaluation of Driving Style (ES-2696401-A1)". **BooBoo Company** has been **beneficiary** of SME inside of **Lab4Pymes 2021 program** in order to make application of this patent.

I have been **Director** of 5 PhD **thesis** and, nowadays, I am supervising 3 PhD thesis. I have tutor of more than 100 degrees final projects.

I have participated in the organization of 3 international congresses and 2 national congresses. I have been **assessor** of EMPLEA program, research projects for the Convocatoria de Ayudas de la Dirección General de Tráfico, ayudas para contratos Torres Quevedo for ANEP, projects I+D+i for ANEP, among others. I am reviewer of more than 20 JCR Journals.

Part C. RELEVANT MERITS

C.1. Publications

1. Tire Slip H^∞ Control for Optimal Braking Depending on Road Condition. M. Meléndez-Useros, M. Jiménez-Salas, V. Viadero-Monasterio and **B.L. Boada**. Sensors, 23, 1417. 2023. doi: <https://doi.org/10.3390/s23031417>. (JCR: **Q1** in 2021)
2. Simultaneous Estimation of Vehicle Sideslip and Roll Angles Using an Integral-Based Event-Triggered H^∞ Observer Considering Intravehicle Communications. **B.L. Boada**, F. Viadero-Monasterio; H. Zhang and M.J.L. Boada. IEEE Transactions on Vehicular Technology. 2022. doi: 10.1109/TVT.2022.3222866. (JCR: **Q1** in 2021)
3. H^∞ dynamic output feedback control for a networked control active suspension system under actuator faults. F.Viadero, **B.L.Boada**, M.J.L.Boada and V.Diaz. Mechanical Systems and Signal Processing. 2022. doi: 10.1016/j.ymsp.2021.108050. (JCR: **Q1** in 2021)
4. LMI-Based H^∞ Controller of Vehicle Roll Stability Control Systems with Input and Output Delays. J. Pajares Redondo, **B.L.Boada** and V. Diaz. Sensors. 21(23). 2021. doi: <https://doi.org/10.3390/s21237850>. (JCR: **Q1** in 2021)
5. Event-triggering Hinfinitiy-based observer combined with NN for simultaneous estimation of vehicle sideslip and roll angles with network-induced delays. M.J.L. Boada, **B.L. Boada** and H. Zhang, Nonlinear Dynamics. 2021. doi: 10.1007/s11071-021-06269-7. (JCR: **Q1** in 2021)
6. Sensor fusion based on a Dual Kalman Filter for estimation of road irregularities and vehicle mass under static and dynamic conditions. **B.L.Boada**, M.J.L.Boada and H. Zhang. IEEE/ASME Transactions on Mechatronics. 2019. doi: 10.1109/TMECH.2019.2909977. (JCR: **Q1** in 2019)
7. A robust observer based on energy-to-peak filtering in combination with neural networks for parameter varying systems and its application to vehicle roll angle estimation. **B.L. Boada**, M.J.L.Boada and V. Diaz. Mechatronics. 50. pp 196-204. 2018. doi: <https://doi.org/10.1016/j.mechatronics.2018.02.008> (JCR: **Q1** in 2018)



8. A Novel Inverse Dynamic Model for a Magnetorheological Damper based on Network Inversion. M.J.L. Boada, **B.L. Boada** and V. Diaz. *Journal of Vibration and Control*. pp.1-20. 2018. doi: 10.1177/1077546317705991. (JCR: **Q1** in 2018).
9. A robust observer based on H-infinity filtering with parameter uncertainties combined with Neural Networks for estimation of vehicle roll angle. **B.L.Boada**, M.J.L. Boada, L. Vargas-Melendez and V. Diaz. *Mechanical System and Signal Processing*. Vol. 99C, pp. 611-623. 2018. doi: 10.1016/j.ymssp.2017.06.044. (JCR: **Q1** in 2018).
10. A novel frequency dependent model based on trigonometric functions for a magnetorheological damper. M.J.L. Boada, **B.L.Boada** and V. Diaz. *Meccanica*. Vol. 52 (11-12) pp: 2567-2581. 2017. doi: 10.1007/s11012-017-0632-2. (JCR: **Q2** in 2017).
11. Constrained Dual Kalman Filter Based on pdf Truncation for Estimation of Vehicle Parameters and Road Bank Angle: Analysis and Experimental Validation. **B.L.Boada**, D. Garcia-Pozuelo, M.J.L. Boada and V. Diaz. *IEEE Transactions on Intelligent Transportation System*. Vol. 18 (4). pp. 1006-1016. 2017. doi: 10.1109/TITS.2016.2594217. (JCR: **Q1** in 2017).

C.2. Congress

1. Luis Santiago Martín, Mónica Alonso, Hortensia Amarís, Raquel Fuentetaja, **Beatriz López**, David Martín y José Antonio Iglesias. (2022). Electric ambulance routing based on heuristic cost-based planners in pandemic situations. In *C SCT 2022 – Congress on Smart Computing Technologies*. South Asian University (India) 11-12 December. (Oral presentation)
2. Autonomous Path Following and Emergency Braking Control for Intelligent Vehicles Using Low Cost Devices. Fernando Viadero-Monasterio, M. Jimenez-Salas, **B. L. Boada**, M. J. Boada. 15th International Symposium on Advanced Vehicle Control AVEC 22. Kanagawa Institute of Technology, Kanagawa, Japan. 12-16 September, 2022. (Oral presentation)
3. Event-triggered Robust Output Feedback Controller for a Networked Roll Control System. F. Viadero, M. Jimenez, M. Melendez, J. Garcia-Guzman, **B.L. Boada** and M.J.L. Boada. The Eleventh International Conference on Advances in Vehicular Systems, Technologies and Applications VEHICULAR 2022. Venice, Italy. 22-26 May 2022. (Oral presentation)
4. VEHIOT: Evaluation of Smartphones as Data Acquisition Systems to Reduce Risk Situations in Commercial Vehicles. J. Pajares Redondo, L. Prieto Gonzalez, M.M. Montalvo Martinez, J. Garcia Guzman, S. Sanz Sanchez, M.J.L. Boada and **B.L. Boada**. 2018 IEEE International Conference on Vehicular Electronics and Safety, Madrid, Spain, 12-14 September 2018. (Oral presentation)
5. Analysis of changes on shims stack valve of a high-performance shock absorber. J.L. Chacon, V. Diaz, **B.L.Boada** and M.J.L.Boada. 15th European Automotive Congress EAEC 2017. 3-5 October. Madrid (SPAIN). 2017. (Oral presentation)
6. Applications of shear thickening fluids in automotive engineering. A. Gomez-Moron, M.J.L. Boada, **B.L. Boada**, V. Diaz. 15th European Automotive Congress EAEC 2017. 3-5 October. Madrid (SPAIN). 2017. (Oral presentation)
7. Fuzzy-based rollover controller considering the effect of road-bank for a heavy-duty vehicle. A. Riofrio. **B.L.Boada**, M.J.L.Boada and V. Diaz. 15th European Automotive Congress EAEC 2017. 3-5 October. Madrid (SPAIN). 2017. (Oral presentation)
8. Characterization of the rheological properties of Shear Thickening Fluids (STF) for use in shock transmissions units (STU). A.G. Moron, M.J.L. Boada, **B.L. Boada** and V. Diaz. BIT's 6th Annual World Congress of Advanced Materials, X'ian, China, 14-16 June. 2017. (Oral presentation)
9. Fuzzy-Based Anti-Rollover Controller for a Heavy-Duty Vehicle, using Active Suspension. A. Riofrio, **B.L. Boada**, M.J.L. Boada, D. Garcia-Pozuelo and V. Diaz. FISITA 2016 World Automotive Congress, At BEXCO, Busan, Korea. 2016. (Oral presentation)
10. Fuzzy-based rollover controller considering the effect of road bank for a heavy-duty vehicle. A. Riofrio, **B.L. Boada**, M.J.L. Boada, V. Diaz. 15th European Automotive Congress. Madrid. Spain. 26-30 September 2016. (Oral presentation)



C.3. Research projects

1. Title: New concept of eco-friendly tire based on long life casing and removable green tread (ECOTIRE) [TED2021-129604B-I00]. Main Researchers: Daniel García-Pozuelo Ramos y Miguel Ángel Martínez Casanova. Financing Entity: AEI- Ministerio de Ciencia e Innovación. Funds: 195.000,00 €. Duration: 01/12/2022- 30/11/2024. **Researcher.**
2. Title: New paradigm of emergency transport service management: Ambulances (AMBULATE-CM)]. **Main Researcher: Beatriz López Boada.** Financing Entity: Comunidad de Madrid. FEDER – RECURSOS REACT-UE. Funds: 1.055.000,00 €. Duration: 01/01/2022- 31/12/2022.
3. Title: Intelligent Driving Safety System under an IoT platform with low-cost devices (IoT4SafeDriving) [RTI2018-095143-B-C2]. **Main Researcher: Beatriz López Boada** and M^a Jesús López Boada. Financing Entity: AEI- Ministerio de Ciencia, Innovación y Universidades. Funds: 121.000,00 €. Duration: 01/01/2019 – 30/09/2022.
4. Title of the project: Sistema inteligente de prevención de vuelco en vehículos comerciales basado en FPGAS [TRA2013-48030-C2-1-R]. Financing Entity: Ministerio de Economía y Competitividad. **Main researcher: Beatriz López Boada** and Antonio Gauchia. Funds: 108.900,00 €. Duration: 01/01/2014 – 31/12/2017.
5. Title: Curriculum development: Highway/Road Construction Engineering and Vehicle Engineering [544061-TEMPUS-1-2013-1-UK-TEMPUS-JPCR]. Main Reseracher: Dr. Oluremi Olatunbosun (University of Birmingham, UK). Financing Entity: European Union. Funds: 837.996,69 €. Duration: 09/02/2013-30/11/2017. **Researcher.**
6. Title of the project: Desarrollo de un sistema HIL para la mejora de la estabilidad lateral de un vehículo automóvil [CCG10-UC3M/DPI-4614]. Financing Entity: Comunidad de Madrid. **Main researcher: Beatriz López Boada.** Funding entity: COMUNIDAD DE MADRID-UC3M. Funds: 3.991,60 euros €. Duration: 01/01/2011-29/02/2012.
7. Title of the project: Design and modelling of an intelligent semi-active suspension system based on magnetorheological dampers [TRA2008-05373/AUT]. Financing Entity: Ministerio de Educación y Ciencia. Main researcher: María Jesús López Boada. Funds: 50.094,00 €. Duration: 01/01/2009 – 31/12/2011. **Reseacher**
8. Title of the project: Development of a "Hardware in the loop" system of an active rollhil system [CCG08-UC3M/DPI-4194]. Financing Entity: Comunidad de Madrid-UC3M. **Main researcher: Beatriz López Boada.** Funds: 3.955,00 euros €. Duration: 01/01/2009-31/12/2009.

C.4. Contracts, technological or transfer merits

1. Title: INTERPRETATIC. Financing Entity: Transformación Agraria S.A. Contract. Main Researchers: Javier García Guzman and Fernando Garcia Fernandez. Funds: 100.000,00 €. Duration: 28/11/2019– 27/11/2022. (Autonomous Vehicles in the archaeological park of Segobriga, Cuenca).
2. Title: Asistencia en ITV en Castilla y León. Financing Entity: Junta Castilla y Leon. Contract. Main Researchers: Vicente Díaz López and José Luis San Román. Duration: 17/06/2020– 16/01/2021.
3. Title: Alcance de protección de. La patente europea 0 973 968 B1, validated in España with number ES2199381-T3. Contract. Financing Entity: Hogan Lovells International LLP. Main Researchers: José Luis San Román and **Beatriz López Boada.** Duration: 24/09/2020– 24/09/2021.
4. Title: Cities Timanfaya. Financing Entity: centros de arte, cultura y turismo de Lanzarote. Contract. Main Researchers: José Luis San Román and Jose María Armingol. Funds: 406.806,51 €. Duration: 19/11/2018–19/05/2020. (Autonomous Vehicles in the natural park of Timanfaya, Lanzarote).
5. Title: Diseño en I+D de material ferroviario. Entidad financiadora: Kuitver, S.L Contract. Main Researcher: Vicente Díaz López (UC3M). Funds: 63.686,96 €. Duration: 08/06/2012– 07/03/2013.
6. Title: Sistema y procedimiento de evaluación de estilo de conducción. Patent. Inventors: Vicente Díaz López, Ester Olmeda Santamaría, Ana M^a Gómez Amador, **Beatriz López Boada**, M^a Jesús López Boada and Jose Luis San Román García. Publication Date: 15/01/2019. Grant Number: 2696401. Publication Number: ES-2696401-A1. Application Number: ES-201730919-A.