

CURRICULUM VITAE ABREVIADO (CVA)

Part A. PERSONAL INFORMATION

First name	Publio		
Family name	Pintado Sanjuán		
Gender (*)	Male	Birth date (dd/mm/yyyy)	11/07/1961
ID number	30.198.690 N		
e-mail	Publio.Pintado@uclm.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-9919-2142	

(*) Mandatory

A.1. Current position

Position	Full Professor of Mechanical Engineering		
Initial date	18/02/2000		
Institution	Universidad de Castilla – La Mancha		
Department/Center	Mecánica Aplicada e Ingeniería de Proyectos E.T.S. de Ingenieros Industriales de Ciudad Real		
Country	Spain	Telephone number	926295434
Key words	Vibrations, pneumatic suspensions, railway vehicles and comfort.		

A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
01/09/1989 – 31/08/1991	Fulbright Fellow / Virginia Polytechnic Institute / USA
01/05/1991 – 17/02/2000	Associate Professor / University of Seville / Spain
01/01/2008 – 31/12/2008	Visiting Professor / University of Massachusetts / USA

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
M.Sc. Industrial Engineer	University of Seville / Spain	1986
Ph.D. in Industrial Engineering	University of Seville Spain	1989

Part B. CV SUMMARY

Publio Pintado graduated as an Industrial Engineer (with emphasis in Mechanical Engineering) from the University of Seville (Spain) in 1986 and obtained his Ph.D. from the same university in 1989. He was a Postdoctoral Fulbright Fellow in the Virginia Polytechnic Institute (USA) during two academic years (1989–1991). He was Associate Professor with the University of Seville (1991–1998) and is currently Full Professor of Mechanical Engineering at the University of Castilla La Mancha (Spain). He was a Visiting Professor in the Department of Mechanical and Industrial Engineering of the University of Massachusetts, Amherst (USA) where he spent a Sabbatical year (2008).

His research interests are now focused on vibration isolation and control. The latest research endeavors in this respect may be grouped as follows. a) Thermodynamic behavior of pneumatic suspensions for railway vehicles. Mr. Pintado's group was the first to experimentally determine polytropic indexes of air in pneumatic suspension systems at different frequencies, debunking the widespread belief that indexes transition from isothermal to adiabatic as frequency grows. b) Mechanical behavior of emergency rubber springs for high-speed railway vehicles. The main contributions in this area relate to the fine-tuning and experimental validation of a model to account for creep, relaxation, and internal friction and viscosity. A key new idea was to devise a process to avoid "numerical softening" while the model is being used in a simulation package. c) The optimal control of magnetorheological dampers, for which their mechanical behavior has been experimentally assessed and modelled, and with which several control strategies have been tested and ranked. d) The use of viscoelastic materials in constrained layer dampers (CLD) for vibration isolation, the quantification of vibration reduction, the study of the most appropriate CLD layout on the structure, and the precise

measurement of the influence of test parameters on Experimental Modal Analysis results. e) The use of piezoelectric materials to reduce vibration, not only by energy dissipation in shunt circuitry, but by interconnection of the piezo elements on a structure to enhance vibration cancelling.

The ideas succinctly described in the previous paragraph have been published in highly respected journals and have also been presented at international conferences. Throughout his career, Mr. Pintado has published 146 research papers in peer reviewed international journals and conference proceedings. He holds 4 patents in Spain, has been Principal Researcher in 15 projects financed by the Spanish Government, and has participated in 16 other research projects. He has participated in 122 consulting contracts with private companies, being the lead researcher in many of them. He has been the advisor of 6 PhD candidates whose theses received the highest “cum laude” grade.

He has taught many subjects related to Mechanical Engineering, not only at the University of Seville and the University of Castilla La Mancha, but also at Virginia Tech and at the University of Massachusetts. The courses he taught and teaches are the following: Vector Mechanics, Machine Elements, Mechanical Vibrations, Mechanism and Machine Theory, Machine Design, Automotive Engineering, and Transportation Engineering. His students regard him as a very engaging and enthusiastic educator, albeit rigorous, as shown in the annual surveys. He has published 4 textbooks (in Spanish), the latest being “Vector Mechanics in Examples”.

He received the Castilla La Mancha regional government award for Innovation in Technology in 2007. He was Vice Dean at ETSII – UCLM from 2000 to 2003, and Vice Chancellor for International Relations at UCLM from 2003 to 2007.

Part C. RELEVANT MERITS

C.1. Publications

1. A.L. Morales, E. Palomares, A.J. Nieto, P. Pintado; Probability distributions for stochastic comfort in railway vehicles, *Vehicle System Dynamics* (published online)
2. E. Palomares, A.L. Morales, A.J. Nieto, M. Félix, J.M. Chicharro, P. Pintado; Is the standard ride comfort index an actual estimation of railway passenger comfort? *Vehicle System Dynamics* 61, 2811-2824 (2023)
3. E. Palomares, A.L. Morales, A.J. Nieto, M. Félix, J.M. Chicharro, P. Pintado; Adaptive optimal control of pneumatic suspensions for comfort improvement of flexible railway vehicles using Monte Carlo simulations, *Vehicle System Dynamics* 61, 2790-2810 (2023)
4. M. Melero, A.J. Nieto, V. Casero-Alonso, E. Palomares, A.L. Morales, C. Ramiro, J.M. Chicharro, P. Pintado; Experimental analysis of Constrained Layer Damping Structures for vibration isolation in lightweight railway vehicles, *Applied Sciences* 12, 8220 (2022)
5. M. Melero, A.J. Nieto, A.L. Morales, E. Palomares, J.M. Chicharro, C. Ramiro, P. Pintado; Design of Experiments to determine the influence of test procedure on Experimental Modal Analysis, *Journal of Sound and Vibration* 538, 117229 (2022)
6. E. Palomares, A.L. Morales, A.J. Nieto, J.M. Chicharro, P. Pintado; Comfort improvement in railway vehicles via optimal control of adaptive pneumatic suspensions, *Vehicle System Dynamics* 60, 1702-1721 (2022)
7. A.L. Morales, J.M. Chicharro, E. Palomares, C. Ramiro, A.J. Nieto, P. Pintado; Experimental analysis of the influence of the passengers on flexural vibrations of railway vehicle carboodies, *Vehicle System Dynamics* 60, 2825-2844 (2022)
8. P. Pintado, C. Ramiro, E. Palomares, A.L. Morales, A.J. Nieto, J.M. Chicharro; Influence of structural stiffness and loss factor on railroad vehicle comfort, *Applied Sciences* 11, 9273 (2021)
9. P. Pintado, C. Ramiro, A.L. Morales, A.J. Nieto, J.M. Chicharro; The dynamic behaviour of pneumatic vibration isolators, *Journal of Vibration and Control* 24 (19), 4563-4574.
10. P. Pintado, C. Ramiro, M. Berg, A.L. Morales, A.J. Nieto, J.M. Chicharro, J.C. Miguel de Priego, E. García; On the mechanical behaviour of rubber springs for high speed rail vehicles, *Journal of Vibration and Control* 24 (20), 4676-4688 (2018).

C.2. Conference papers

Presented orally by the highlighted author. If no author is highlighted, the paper was presented at a poster session.

1. Morales A.L.; Palomares E.; Nieto A.J.; Ramiro C.; **Pintado P.**; On the stochastic nature of comfort on railway vehicles, IAVSD 2023 “28th International Symposium on Dynamics of Vehicle on Roads and Tracks”, Ottawa (Canada), August 2023.
2. Felix M.; Palomares E.; Morales A.L.; Nieto A.J.; Chicharro J.M.; Pintado P., On the influence of passengers on railway vehicle comfort, ISMA 2022 “International Conference on Noise and Vibration Engineering”, Leuven (Belgium), September 2022.
3. **Nieto A.J.**; Palomares E.; Ruiz D.; Donoso A.; Ramiro C.; Morales A.L.; Chicharro J.M.; Pintado P., Minimizing flexural vibration response of lightweight railway vehicle structures through topological optimization of constrained viscoelastic layers, ISMA 2020 “International Conference on Noise and Vibration Engineering”, Leuven (Belgium), 7-9 September 2020
4. Felix M.; **Palomares E.**; Morales A.L.; Nieto A.J.; Chicharro J.M.; Pintado P., Pointwise-constrained optimal control applied to comfort improvement in railway vehicles with adaptive pneumatic suspensions, ISMA 2020 “International Conference on Noise and Vibration Engineering”, Leuven (Belgium), 7-9 September 2020
5. Palomares, E.; Felix, M.; Morales, A.L.; Nieto, A.J.; Chicharro, J.M.; **Pintado, P.**, Comfort Improvement of an Adaptive Vehicle Suspension via Pointwise-Constrained Optimal Control, IAVSD 2019 “26th International Symposium on Dynamics of Vehicle on Roads and Tracks”, Gothenburg (Sweden), 12-16 August 2019
6. Pintado P.; **Ramiro C.**; Morales A.L.; Nieto A.J.; Chicharro J.M., High speed railway vehicle comfort. The influence of pneumatic flow restrictor diameter, rail irregularities, speed and structural damping and stiffness, IAVSD 2019 “26th International Symposium on Dynamics of Vehicle on Roads and Tracks”, Gothenburg (Sweden), 12-16 August 2019
7. Ramiro C.; **Pintado P.**; Morales A.L.; Nieto A.J.; Chicharro J.M., Optimization of flow restrictor diameter in high speed railway vehicle suspensions, ISMA 2018 “International Conference on Noise and Vibration Engineering”, Leuven (Belgium), 17-19 September 2018.
8. Ramiro C.; **Pintado P.**; Morales A.L.; Nieto A.J.; Chicharro J.M., The influence of rubber emergency springs on railway vehicle pneumatic suspension behavior, IAVSD 2017 “25th International Symposium on Dynamics of Vehicle on Roads and Tracks”, Rockhampton (Australia), 14-18 August 2017.
9. Palomares E.; Nieto A.J.; Morales A.L.; Chicharro J.M.; Pintado P., Numerical and experimental analysis of a vibration isolator equipped with a negative-positive stiffness system, ISMA 2016 “International Conference on Noise and Vibration Engineering”, Leuven (Belgium), 19-21 September 2016
10. Morales A.L.; Nieto A.J.; Chicharro J.M.; **Pintado P.**, An adaptive pneumatic system for the attenuation of random vibrations, ICSV20 “20th International Congress on Sound and Vibration”, Bangkok (Thailand), 7-11 July 2013

C.3. Research projects and grants

1. *Laboratorio de análisis modal de grandes estructuras móviles*. EQC2021-007514-P, MINECO, UE. IP: P. Pintado (6 participants). Amount: 1.160.875€ (06/01/2021-12/31/2024)
2. *Apilados piezoeléctricos interconectados para reducción de vibraciones en estructuras de trenes de muy alta velocidad*. PID2020-113747RB-I00, MINECO. IP: P. Pintado / A.J. Nieto (6 participants). Amount: 217.800€ (09/01/2021-08/31/2024)
3. *Amortiguadores magnetoreológicos, absorbentes dinámicos y paneles viscoelásticos para mejora del confort de vehículos ferroviarios con estructuras aligeradas y carga variable*. TRA2017-83376-R, MINECO. IP: P. Pintado (6 participants). Amount: 145.200€ (01/01/2018-12/31/2021)
4. *Mejora del confort del transporte ferroviario de alta velocidad mediante suspensiones neumáticas adaptativas y amortiguadores magnetoreológicos*. TRA2014-53552-R,

- MINECO. IP: Publio Pintado (5 participants). Amount: 121.000€ (01/01/2015-12/31/2017)
5. *Adaptación neumática y control magnetoreológico de suspensiones para transporte y maquinaria*. DPI2011-25602, MICINN. IP: P. Pintado (4 participants). Amount: 84.700€ (01/01/2012-12/31/2014)
 6. *Optimización y adaptabilidad de suspensiones neumáticas para transporte y maquinaria*. DPI2009-10230, MICINN. IP: P. Pintado (4 participants). Amount: 150.000€ (01/01/2010-12/31/2011)
 7. *Vibrador y mesa de ensayos*. FEDER. IP: P. Pintado (4 participants). Amount: 176.510€ (01/01/2008-12/31/2011)
 8. *Sistema de barrido laser para ensayos combinados de vibración y temperatura*. UNCM05-23-024, FEDER. IP: P. Pintado (4 participants). Amount: 244.873€ (01/01/2005-12/31/2007)
 9. *Vibradores de alta potencia*. FEDER. IP: P. Pintado (4 participants). Amount: 211.873€ (01/01/2002-12/31/2003)
 10. *Nuevos mecanismos para sillas de ruedas con capacidad para subir escaleras*. DPI2004-07706, CICYT. IP: P. Pintado (4 participants). Amount: 159.340€ (12/19/2004-12/18/2007)

C.4. Contracts, consulting, technology transfer

1. *Ensayo de modos propios para carena de morro de tren de alta velocidad*. Company: Patentes Talgo. IP: P. Pintado (6 participants). Amount: 5.324€ (June 2022)
2. *Análisis modal experimental y operacional de coches sobre ejes 8 y 9 del tren "Avril" en condiciones de tara y carga*. Company: Patentes Talgo. IP: P. Pintado (6 participants). Amount: 75.625€ (03/01/17-12/31/20)
3. *Análisis de los sistemas electrónicos de control para navegación de la aeronave F-18*. Company: TecnoBit. IP: A.J. Nieto (4 participants). Amount: 7.215€ (02/01/18-07/31/18)
4. *Cualificación experimental vibratoria a filtros para versión eléctrica del vehículo Smart*. Company: Nagares SA. IP: A.J. Nieto (4 participants). Amount: 6.116€ (02/2017-05/2017)
5. *Desarrollo de un novedoso sistema de pruebas para brocas autoblocantes*. Company: Micromar Europe SL. IP: A.J. Nieto (5 participants). Amount: 38.000€ (03/01/11-06/30/11).
6. *Desarrollo mecánico de una plataforma estabilizada*. Company: TecnoBit. IP: P. Pintado (5 participants). Amount: 33.000€ (01/03/2005-28/02/2006)
7. **Patent**. *Instalación para control en línea de vertidos de agua, procedentes de excavaciones de túneles y similares y método para obtención de dicha instalación*. Publication nº: 2 423 968. Owner company: Sacyr Vallehermoso SA. Inventors: J. Pous, M.E. Mateos, F. Cerrolaza. A.L. Morales, A.J. Nieto, P. Pintado, J.M. Chicharro Spain, 2013.

C.5. Administrative positions

1. Manager of the National Research Program on Transportation (TRA), Spanish Government 2014-2018
2. Vice Chancellor for International Relations at UCLM from 2004 to 2008
3. Vice Dean at ETSII-UCLM from 2000 to 2003,

C.6. Awards

Castilla La Mancha regional government "Juanelo Turriano" award for Innovation in Technology, 2007