Part A. PERSONAL INFORMATION

CV date	October 4, 2021

First and Family name	Rafael Vázquez Valenzuela		
Social Security, Passport, ID number	28739184V	Age	46
Researcher numbers	Researcher ID	C-3780-2011	
	Orcid code	http://orcid.org/0000-0001-6904-2055	

A.1. Current position

Name of University/Institution	Universidad de Sevilla			
Department	Dpto. de Ingeniería Aeroespacial y Mecánica de Fluidos / Escuela Técnica Superior de Ingeniería			
Address and Country	Camino de los Descubrimientos s.n. 41092 Sevilla			
Phone number	+34954488148	E-mail	rvazquez1@us.es	
Current position	Profesor Titular de Universidad		From	08-09-2010
UNESCO code (specialization)	3301			
Keywords	Aerospace Engineering, Control Theory			

A.2. Education

Degree	University	Year
Ingeniero Industrial	Universidad de Sevilla	1999
Licenciado en Matemáticas	Universidad de Sevilla	2003
Master in Aerospace Engineering	University of California San Diego	2004
PhD in Aerospace Engineering	University of California San Diego	2006

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

1 supervised PhD (2012), 3 ongoing PhDs
Total citations: 1629 (Researcher ID), 3325 (Google Scholar, see https://scholar.google.com/citations?user=0Zwv3iMAAAAJ)
Citations per year (2016-2020): 406 (Google Scholar)
Total Q1 journal papers: 30 (JCR, including articles in press)
H index: 20 (Researcher ID), 30 (Google Scholar)

Part B. CV SUMMARY

Rafael Vazquez received the M.S. and Ph.D. degrees in aerospace engineering from the University of California, San Diego (USA) in the years 2004 and 2006, respectively, and BS degrees in electrical engineering (Ingeniero Industrial) and mathematics (Licenciado en Matematicas) from the University of Seville (Spain), in the years 1999 and 2003.

Since 2010, he is an **Associate Professor** (Profesor Titular) in the Aerospace Engineering and Fluid Mechanics Department at the University of Seville, where he started as Assistant Professor in 2007. He has been **Chair of the Department** from 2016 to 2020. He has been **Academic Coordinator for the Master's Degree in Aeronautical Engineering and the Bs. Degree in Aerospace Engineering** from 2016 to 2019. He has taught courses in Orbital Mechanics and Space Vehicle Dynamics for more that 10 years.

His research interests include control theory, distributed parameter systems, and optimization, with applications to flow control, ATM, UAVs, and orbital mechanics. He is coauthor of the book Control of Turbulent and Magnetohydrodynamic Channel Flows (Birkhauser, 2007). He currently serves as **Associate Editor** for the journal Automatica (Q1 in the JCR category Automation and Control Systems). Among other merits, he has

published **38 journal papers** (JCR-indexed journals), **85 conference proceedings** (most of them peer reviewed), and **7 book chapters**. He has supervised **one PhD thesis** and is supervising three other students, as well as supervising or co-supervising **13 Diploma thesis (PFC), 6 Master thesis (TFM), and 14 Degree thesis (TFG)**. His main research work has been on control of distributed parameter systems; besides he has worked as a researcher in numerous research projects and contracts with companies in topics related to Air Traffic Control, Applied Mathematics, Guidance and Control of Autonomous Air Vehicles, Control Theory, and Scheduling of Ground Station Antennas. In particular, he has past expertise on the rendezvous problem and in Model Predictive Control techniques. He also belongs to international committees on both Control theory and Aerospace applications, being a regular attendee in conferences on both topics.

His research career is markedly international, with short and long research stays in United States, France, Germany and Brazil (**more than 6 months of postdoctoral stays, plus his full doctoral career in United States with long predoctoral stays in France and Germany**). He has published papers with co-authors from U.S.A., France, Brazil, China, Germany and Greece.

Parte C. Relevant merits

C.1. Journal papers (last 10 years)

1. S. Chen, R. Vazquez, M. Krstic, "Folding Bilateral Backstepping Output-Feedback Control Design For an Unstable Parabolic PDE," in press, IEEE Transactions of Automatic Control, 2021.
2. J. C. Sanchez, C. Louembet, F. Gavilan, R. Vazquez, "Event-based Impulsive Control for Spacecraft Rendezvous Hovering Phases," in press, Journal of Guidance, Control and Dynamics, 2021.
3. J. C. Sanchez, F. Gavilan, R. Vazquez, “Chance-constrained Model Predictive Control for Near Rectilinear Halo Orbit spacecraft rendezvous,” Aerospace Science and Technology Vol. 100, 105827, 2020. [Q1]
4. D. Steeves, M. Krstic, R. Vazquez, “Prescribed–time estimation and output regulation of the linearized Schrödinger equation by backstepping,” in Press, European Journal of Control, 2020. [Q3]
5. L. Camacho, R. Vazquez, M. Krstic, "Boundary Observers for Coupled Diffusion-Reaction Systems with Prescribed Convergence Rate," Systems and Control Letters, vol. 135, 104586, 2020. [Q1]
6. J. C. Sanchez, F. Gavilan, R. Vazquez, C. Louembet, "A Flatness-Based Predictive Controller for Six-Degrees of Freedom Spacecraft Rendezvous," Acta Astronautica, vol. 167, 391-403, 2020. [Q1]
7. G. Andrade, R. Vazquez and D. Pagano, "Backstepping-based linear boundary observer for estimation of thermoacoustic instabilities in the Rijke tube with experimental validation," in press, IEEE Transactions on Automatic Control, 2020. [Q1]
8. Nikolaos Bekiaris-Liberis, Rafael Vazquez, "Nonlinear Bilateral Output-Feedback Control for a Class of Viscous Hamilton-Jacobi PDEs," Automatica, Vol. 101, pp. 223-231, 2019.[Q1]
9. R. Vazquez and M. Krstic, "Boundary control and estimation of reaction-diffusion equations on the sphere under revolution symmetry conditions," International Journal of Control, vol. 92, pp. 2-11, 2019.[Q2]
10. Long Hu, Rafael Vazquez, Florent Di Meglio, Miroslav Krstic, "Boundary exponential stabilization of 1-D inhomogeneous quasilinear hyperbolic systems," SIAM Journal on Control and Optimization, vol. 57, pp. 963-998, 2019.[Q1]
11. G. A. de Andrade, R. Vazquez, and D. Pagano, “Backstepping stabilization of a linearized ODE-PDE Rijke tube model,” in press, Automatica, 2018.[Q1]
12. R. Vazquez, D. Rivas, A. Franco, "Stochastic Analysis of Fuel Consumption in Aircraft Cruise Subject to Wind Uncertainty," Aerospace Science and Technology, Vol. 66, 304-314, 2017.[Q1]

13. F. Gavilan, R. Vazquez, E. F. Camacho, "Pulse-Width Predictive Control for LTV Systems with Application to Spacecraft Rendezvous," Control Engineering Practice, Vol. 60, pp. 199-210, 2017.[Q2]
14. R. Vazquez and M. Krstic, "Boundary Control of Coupled Reaction-Advection-Diffusion Systems with Spatially-Varying Coefficients," IEEE Transactions on Automatic Control, Vol. 62, pp. 2026-2033, 2017.[Q1]
15. Long Hu, Florent Di Meglio, Rafael Vazquez, Miroslav Krstic, "Control of Homodirectional and General Heterodirectional Linear Coupled Hyperbolic PDEs," IEEE Transactions on Automatic Control, Vol. 61, No. 10, pp. 3301-3314, 2016. [Q1]
16. R. Vazquez and M. Krstic, "Boundary Control of Reaction-Diffusion PDEs on Balls in Spaces of Arbitrary Dimensions," ESAIM:Control, Optimization and Calculus of Variations, Vol. 22, No. 4, pp. 1078-1096, 2016.[Q1]
17. F. Perea, R. Vazquez, J. Galan-Vioque, "Swath acquisition planning in multiple-mission EOSs: exact and heuristic approaches," IEEE Transactions on Aerospace and Electronic Systems, vol. 51, No. 3, pp. 1717-1725, 2015. [Q1]
18. F. Gavilan, R. Vazquez, E. F. Camacho, "An Iterative Model Predictive Control Algorithm for UAV Guidance," IEEE Transactions on Aerospace and Electronic Systems, vol. 51, No. 3, pp. 2406 - 2419, 2015. [Q1]
19. J. Qi, R. Vazquez, M. Krstic, 2015 "Multi-agent Deployment in 3-D via PDE Control," vol. 60 (4), pp. 891-906, IEEE Transactions on Automatic Control, 2015. [Q1]
20. F. Gavilan, R. Vazquez and J. A. Acosta, "Adaptive Backstepping Control for UAV Longitudinal Flight Dynamics with Thrust Saturation," vol. 38, No. 4, pp. 651-661, Journal of Guidance, Control and Dynamics, 2015. [Q1]
21. R. Vazquez and M. Krstic, "Marcum Q-functions and Explicit Kernels for Stabilization of 2x2 Linear Hyperbolic Systems with Constant Coefficients," System and Control Letters, vol. 68, 33-42, 2014. [Q1]
22. R. Vazquez, F. Perea, J. Galan-Vioque, "Resolution of an Antenna-Satellite assignment problem by means of Integer Linear Programming," Aerospace Science and Technology, vol. 39, pp. 567-574, 2014.[Q1]
23. R. Vazquez, D. Rivas, "Propagation of Initial Mass Uncertainty in Aircraft Cruise Flight," Journal of Guidance, Control and Dynamics, vol. 36 (2), 415-429, 2013. [Q1]
24. J.-M. Coron, R. Vazquez, M. Krstic, and G. Bastin, "Local exponential H2 stabilization of a 2x2 quasilinear hyperbolic system using backstepping," SIAM Journal on Control and Optimization, vol. 51(3), 2005-2035, 2013. [Q1]
25. F. Di Meglio, R. Vazquez, and M. Krstic, "Stabilization of a system of n + 1 coupled first-order hyperbolic linear PDEs with a single boundary input," IEEE Transactions on Automatic Control, vol. 58(12), 3097-3111, 2013. [Q1]
26. F. Gavilan, R. Vazquez and E. F. Camacho, "Chance-constrained Model Predictive Control for Spacecraft Rendezvous with Disturbance Estimation", Control Engineering Practice, vol 20 (2), 111-122, 2012.[Q2]

C.2. Projects (last 10 years)

1. “Diseño de Algoritmos de Guiado y Control Innovadores para Aplicaciones Avanzadas de Rendezvous: Órbitas Halo y Exploración de Asteroides.” Funding from: Ministerio de Ciencia, Innovacion y Universidades. IP: Rafael Vazquez. 2019-2021. Amount: 39.930€.
2. “AIRPORTS MPC”.Funding from: CDTI - Boeing Research and Technology Institute Europe S.L. (Proyecto CIEN). IP: Eduardo Fernández Camacho (Univ. de Sevilla). 2015-2017. Amount: 200.000€. Role: researcher.
3. “Análisis de Bifurcaciones en Sistemas Dinámicos: Aplicación”. Funding from: Ministerio de Economía y Competitividad. IP: Jorge Galán Vioque (Univ. de Sevilla). 2016-2018. Amount: 51.300€. Role: researcher (50%).
4. “Analisis Y Optimizacion De Trayectorias De Avion Bajo Los Efectos De Incertidumbre Meteorologica”. Funding from: Ministerio de Economía y Competitividad. IP: Damián Rivas Rivas (Univ. de Sevilla). 2015-2017. Amount: 80.000 €. Role: researcher (50%).
5. “SINTONIA: SIstemas No Tripulados Orientados al Nulo Impacto Ambiental”. Funding: CDTI - AERTEC Ingeniería y Desarrollos S.L.U. (Proyecto CENIT). IP: Damián Rivas Rivas. 2009-2012. Amount: 126.000 €. Role: researcher.

6. “Control y optimización de sistemas híbridos de energías renovable”. Funding: Junta de Andalucía (Proyecto de Excelencia). IP: Eduardo Fernández Camacho. 2008-2012. Amount: 375.000 €. Role: researcher (desde 2009).

C.3. Contracts (last 10 years)

1. “Manoeuvre detection for near-orbiting objects”. Funding: Indra (subcontrato para la Agencia Espacial Europea). IP: Rafael Vázquez. 2020. Amount: 40.000€. Role:IP
2. “BASGE: diseño de Bomba Aire-Superficie Guiada para Entrenamiento”. Funding: Aertec Solutions S.L. (programa COINCIDENTE del Ministerio de Defensa). IP: Francisco Gavilán Jiménez. 2020. Amount: 27.500€. Role:researcher
3. "CEFIRO-3". Funding: Aertec Ingeniería y Desarrollos S.L.. IP: Damián Rivas Rivas. 2014-2015. Amount: 100.000 €. Role: researcher.
4. "SESAR WP-E ComplexWorld Network - Mastering Complex Systems Safely". Funding: Eurocontrol - SESAR WP-E (red europea). IP: Damián Rivas Rivas. 2010-2014. Amount: 198.000 €. Role: researcher.
5. "Diseño, desarrollo, Integración y test de un algoritmo de planificación optimizada de las operaciones de antenas de recpeción y transmisión con satélites de observación de la tierra". Funding: Taitus Software Italia. IP: Jorge Galán Vioque. 2012-2013. Role: researcher. Amount: 20.000 €.

C.4. Patents (last 10 years)

"Conflict Detection and Resolution Using Predicted Aircraft Trajectories".
Inventors: I. del Pozo, M.A. Vilaplana, A. Valenzuela, R. Vázquez y D. Rivas.
Owner: The Boeing Company.
Reference: US20130317733, EP2667366 A1.

C.5. International Commitees (last 10 years)

2009-now IFAC Technical Commitee on Aerospace
2012-now IFAC Technicall Commitee on Distributed Parameter Systems
2012-now IEEE Technicall Commitee on Distributed Parameter Systems
(Frequently appearing in the IPC of conferences organized by these committees)
2020 Member of the program committee of CDC 2020
2021 Member of the program committee of CDC 2021

C.6 Review Activities (last 10 years)

Associate editor for the journal Automatica (Q1) since May 2015.
Evaluator for ANEP since 2009. Member of the evaluation panel in the Space science 2020.
Frequent reviewer for JCR journals since 2006 (see details at https://publons.com/author/1230344/rafael-vazquez#stats): Physics of Fluids, Journal of Fluid Mechanics, ASME Journal of Dynamics Systems, Measurement and Control, Ultramicroscopy, IEEE Transactions on Automatic Control, Optimal Control Application and Methods, Journal of the Franklin Institute, Automatica, Systems and Control Letters, SIAM Journal on Control and Optimization, International Journal of Robust and Nonlinear Control, Journal of Vibration and Control, IEEE Transactions on Control Systems Technology, Computers and Mathematics with Applications, AIAA Journal of Guidance, Control, and Dynamics, Asian Journal of Control, International Journal of Control, and others. Book reviewer for Springer.
ANECA Acredita+ and EUR-ACE evaluator. 2016: panel 45+ (UPM), 2019: panel 29 (UPM, as chair of the panel), panel 18 (UC3M), 2020: future evaluations agreed for ANECA (UJRC, as chair of the panel).

C.6 Event Organization (last 10 years)

General Chair: IFAC Workshop ACNAAV’15: 78 participants, with registration, proceedings, and peer review.