

Part A. PERSONAL INFORMATION

CV date

11/12/2020

First and Family name	Ricard González Cinca		
Researcher codes	Open Researcher and Contributor ID (ORCID)		
	SCOPUS Author ID		
	WoS Researcher ID		

A.1. Current position

Name of University	Universitat Politècnica de Catalunya		
Department	Physics		
Address and Country	Edif. C3, desp. 109, c/ E. Terradas 5, 08860 Castelldefels		
Current position	Profesor Titular (Associate Prof.)	From	17/07/2002
Key words	Microgravity, fluids, energy		

A.2. Education

PhD, Licensed, Graduate	University	Year
PhD in Sciences	Universitat Politècnica de Catalunya	2000
Licenciatura en Física	Universitat de Barcelona	1991

A.3. General indicators of quality of scientific production

Six-year research periods (sexenios): 4 Date of the last granted: 01/01/2020
 Number of PhD thesis supervised in the last ten years: 3
 Number of citations: 376 (WoS), 661 (Scholar Google)
 Average number of citations in the last five years (2015-2019): 26.4 (WoS), 42.2 (Scholar Google)
 Number of publications in the first quartile (Q1): 17
 h Index: 12 (WoS), 15 (Scholar Google)

Part B. CV SUMMARY

Ricard González-Cinca is an associate professor at the Department of Physics at the Technical University of Catalonia-BarcelonaTech (UPC). He got a BSc and an Msc in Physics at the University of Barcelona and a PhD in Science at the UPC. He is the founder and director of the UPC Microgravity Laboratory. He has been Assistant Director of Resources and Assistant Director of Aeronautical Studies at the UPC Castelldefels School of Technology for six years and coordinator of international relations at his department. He has been the designer and the course director of the UPC Master in Aerospace Science and Technology since its beginning in 2007. Since 2005 he organizes annually a series of space seminars with speakers from ESA, CNES, CDTI, and NASA.

His research activity is currently focused on the fields of fluid dynamics and energy management in space. His activity in fluid dynamics started with the creation in 2005 of the Microgravity Laboratory. In this lab, experimental, numerical and analytical work with multiphase fluids is carried out. Some of the experimental set-ups have been tested in ESA and NASA platforms: drop towers, parabolic flights, large diameter centrifuge, sounding rocket, and reusable suborbital launch vehicles. During his sabbatical leave in 2010-11 at the Center for Systems Studies of the University of Alabama in Huntsville and at the NASA Marshall Spaceflight Center he started a research line on energy storage and electricity generation in space. His current and future research interests are focused on the development of acoustic-based technologies for boil-off control and mass gauging in cryogenic propellant tanks in microgravity, as well as in the design and development of power systems for lunar missions.



He has supervised 3 PhD theses, 57 Bachelor's or Master's theses, and seven teams of students selected by ESA to carry out experiments in hypergravity or microgravity platforms.

He has coordinated and participated in numerous national and international projects and is currently the PI in a MCI and a CNES project, and co-PI in a NASA project to start in 2021. He has published about 40 papers in international journals and has coordinated research projects with industry and space agencies (ESA, NASA, and CNES). He acts as a reviewer of research projects for various Spanish and international (H2020, NASA) agencies and reviews papers for several international journals (Physical Review Letters, Physical Review E, Acta Astronautica, Energy, etc.). He monitored one H2020 project. He is member of the editorial board of the International Journal of Interfacial Phenomena and Heat Transfer. He is member of the Management Committee of the European Low Gravity Research Association (ELGRA) since 2013, and he was elected President of ELGRA in 2017 and re-elected in 2019. He has been chair of the ELGRA biannual Symposium two times, and chair of the EUCASS ISRU Workshop in 2019. He created the annual ELGRA/ESA Gravity-related Research Summer School and co-organized it in the three first editions (2016-2018). He has given lectures and organized space-related events at Cosmocaixa, and spread the research carried out in his lab in national and international media.

Part C. MOST RELEVANT MERITS

C.1. Publications (10 most relevant since 2010 out of 22)

1. T. Fili, F. Gòdia, R. González-Cinca, *Trade-off analysis of phase separation techniques for advanced life support systems in space*, Acta Astronautica 178, 571-583 (2021).
2. F. Suñol, D. Ochoa, M. Granados, R. González-Cinca, J.E. García, *Performance assessment of ultrasonic waves for bubble control in cryogenic fuel tanks*, Microgravity Science and Technology 32, 609-613 (2020).
3. F. Suñol and R. González-Cinca, *Effects of gravity level on bubble detachment, rise, and bouncing with a free surface*, International Journal of Multiphase Flows 113, 191-198 (2019).
4. G. Quintana-Buil, A. Garcia-Sabaté, S. Battle, G. López, V. Sierra, O. Casas, and R. González-Cinca, *A sounding rocket experiment to control boiling by means of acoustic waves*, Microgravity Science and Technology 30, 731-736 (2018).
5. F. Suñol and R. González-Cinca, *Low Weber number jet collision regimes in microgravity*, Physics of Fluids 29, 112106 (2017).
6. F. Suñol and R. González-Cinca, *Effects of gravity level on bubble formation and rise in low-viscosity liquids*, Physical Review E 053009 (2015).
7. A. García-Sabaté, A. Castro, M. Hoyo and R. González-Cinca, *Experimental study on inter-particle acoustic forces*, J. Acoust. Soc. Am. 135, 1056-1063 (2014).
8. F. Suñol and R. González-Cinca, *Effects of momentum flux and separation distance on bubbly jet impingement in microgravity conditions*, Chem. Eng. Sci. 97, 272-281 (2013).
9. S. Arias, D. Legendre, and R. González-Cinca, *Numerical simulation of bubble generation in a T-junction*, Computers & Fluids 56, 49-60 (2012).
10. F. Suñol and R. González-Cinca, *Rise, bouncing and coalescence of bubbles impacting at a free surface*, Journal of Colloids and Surfaces A 365, 36-42 (2010).

C.2. Participation in R&D&i projects (since 2010)

1. **NASA** project: *Integrated acoustic technology for boil-off control, mass gauging, and structural health monitoring in cryogenic fuel tanks*, PI: Fu-Kuo Chang (Stanford University), R. González-Cinca (co-PI), 2021-2023, \$ 650.000, selected, to start in 2021.
2. **ESA** project: *Bubble management by means of acoustics* (HRE/RS-PS/2018-6/AO), PI: R. González-Cinca, 2018-2020, funding of 30 drops at the ZARM drop tower (Germany), finished.



3. **MINECO** project: *Control acústico de la ebullición en depósitos de combustible en microgravedad* (ESP2016-79196-P), PI: R. González-Cinca, 2016-2019 (extended to 2020), 242.000 €, ongoing.
4. **MINECO** project: *Bubble control by means of a piezoelectric device at cryogenic conditions* (ESP2015-72277-EXP), PI: R. González-Cinca, 2017-2019, 36.300 €, finished.
5. **MINECO** Project: *Gestión de flujos multifásicos y de energía para aplicaciones en exploración espacial* (AYA2012-34131), PI: R. González-Cinca, 2013-2015, 140.400 €, finished.
6. **ESA** project: *Liquid jet injection and impingement* (ESA HSO/US/2013-002/AO), PI: R. González Cinca, 2013, funding of 25 drops at the ZARM drop tower (Germany), finished.
7. **EU RTD Framework Programme**: *Smart and Green interfaces: from single bubbles/drops to industrial, environmental, biomedical applications* (COST Action MP1106), PI: Thodoris Karapantsios (University of Thessaloniki, Greece), 2012-2016, 400.000 €, participation of RGC: researcher, finished.
8. **NASA** project: *Application of controlled vibrations to multiphase systems for space applications* (NASA AO No. OCT-1-10), PI: R. González-Cinca, 2012-2019, funding of 3 suborbital flights (UP Aerospace), finished.
9. **MICINN** project: *Multiphase fluids management in low gravity environment* (AYA2009-11493), PI: R. González-Cinca, 2010-2013, 237.000 €, finished.

C.3. Participation in R&D&I contracts (since 2010)

1. **CNES**: *Système acoustique pour la mesure directe de masse d'ergols* (5700004626 / DLA094), PI: R. González-Cinca, 2020-2021, 100.000 €, ongoing.
2. **CNES**: *Contrôle acoustique des bulles dans des réservoirs cryogéniques* (5700002641 / DLA090), PI: R. González-Cinca, 2018-2019, 35.000 €, finished.
3. **ESA**: *Lunar ISRU Energy Storage and Electricity Generation* (4000124000/18/NL/AF), PI: R. González-Cinca, 2018-2019, 100.000 €, finished.
4. **AQUA.abib** Water solutions s.l.: *Simulation of AQUA.abib's water distillation system*, PI: R. González-Cinca, 2017-2018, 14.231,45 €, finished.

C.4. Most relevant invited lectures (since 2010)

- Case Western Reserve University, Department of Mechanical and Aerospace Engineering, USA (2010).
- University of Alabama in Huntsville, Department of Mechanical and Aerospace Engineering, USA (2010).
- University of Alabama in Huntsville, Department of Chemical Engineering, USA (2010).
- Center for Space Plasma and Aeronomic Research, USA (2011).
- Università La Sapienza, Italy (2013-2020).
- Université Libre de Bruxelles, Belgium (2013).
- NASA Ames Research Center, USA (2014).
- ESA Academy, Belgium (2016, 2017, 2018).
- CosmoCaixa Barcelona, Caixa Fórum Sevilla, Caixa Fórum Zaragoza (2019).
- American Society for Gravitational and Space Research, USA (2019).
- Next-Generation Suborbital Researchers Conference, USA (2020).



C.5. Other (since 2010)

- Member of several PhD committees in Spain and France.
- Reviewer of: H2020, NASA PP, NSERC, ANECA, ANEP, AEI, AGAUR, ACAP, AIDIT, Madri+d.
- Press, internet, and TV news on the research carried out in my lab (ABC, Agencia SINC, Antena3, Ara, BarcelonaTV, Diari de Girona, Diari de Tarragona, El Castell, El Llobregat, El País, El Periódico, El Punt Avui, El 3 de Vuit, IIE, La Razón, La Vanguardia, La Voz, materialsgate.de, ndtv.com, Noticias.com, Huntsville Times, redorbit.com, Regió 7, sciencedaily.com, TVE, TV3, UAH, ummid.com, XipTV, etc.).
- Exhibition of an experimental setup at expo Viure a l'espai in Viladecans.
- Member of the EUCASS (European Conference for AeroSpace Sciences) Scientific Committee (since 2010).
- Member of the Management Committee of COST Action MP1106 (2012-2016).
- Member of the Management Committee of the European Low Gravity Research Association, ELGRA (since 2013).
- Organizer of the ELGRA/ESA Gravity-related Research Summer School (2016-2018).
- Member of the Editorial Board of the International Journal of Interfacial Phenomena and Heat Transfer (since 2017).
- President of the European Low Gravity Research Association, ELGRA (since 2017).
- Exhibition of the modules "Surviving a night in the Moon" and "Dealing with Microgravity" at Moonit Cosmocaixa Barcelona (2017).
- Moon project exhibited in Maker Faire Barcelona (2018).
- Monitor of a H2020 project (2018-2019).
- Chair of the ELGRA Biennial Symposium (Juan les Pins, 2017, and Granada, 2019).
- Chair of the ISRU Workshop at EUCASS conference (Madrid, 2019).
- Chair of the Space Exploration Workshop at EUCASS conference (Lille, 2021).