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*CURRICULUM VITAE*

*DAVID TORREGROSA BELÉN*

*NOVEMBER 2024*

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## PERSONAL DATA

**Name:** David Torregrosa Belén

**Date of birth:** 30/11/1996

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**Research Gate ID:** [profile/David-Torregrosa-Belen](#)

## CURRENT PROFESSIONAL SITUATION

**Professional position:** Postdoctoral researcher

**Starting date:** 20/09/2024

**Organization:** Universidad de Chile

**Center:** Centro de Modelamiento Matemático

**Department:** Matemáticas

**Situation:** Postdoctoral fellow under the program “Postdoctoral Positions at CMM 2024” supported by the BASAL fund FB210005 for center of excellence from ANID-Chile

**Contract period:** 20/09/2024 – 19/09/2025

**Commitment:** Full time

## EDUCATION AND ACADEMIC EXPERIENCE

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|---------------------|---|
| Sep 2015 – Jun 2019 | Bachelor’s Degree in Mathematics, University of Alicante, Spain.  |
| Oct 2019 – Jun 2020 | Master’s Degree in Mathematics, University of Sevilla, Spain.   |
| Sep 2020 – Jun 2024 | Ph.D. in Mathematics, University of Murcia, Spain. Thesis: “Splitting Algorithms for Structured Optimization: Theory and Applications”, awarded “Sobresaliente Cum Laude” (highest mark) and European Mention. Thesis advisor: Francisco J. Aragón Artacho. |
| Jun 2024 – Aug 2024 | Postdoctoral Research Fellow, University of Alicante, Spain.  |
| Sep 2024 –          | Postdoctoral Researcher Centro de Modelamiento Matemático, Universidad de Chile, Chile.   |

## TEACHING EXPERIENCE (University of Alicante)

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|-----------|---|
| 2021-2022 | <i>Programación lineal</i> , 2 <sup>nd</sup> year course at the “Grado en Matemáticas” (Degree in Mathematics), University of Alicante, 1.2 credits (12 hours). |
| 2021-2022 | <i>Topología Básica</i> , 2 <sup>nd</sup> year course at the “Grado en Matemáticas” (Degree in Mathematics), University of Alicante, 0.7 credits (7 hours).     |

- 2021-2022 *Introducción a la estadística*, 1<sup>st</sup> year course at the “Grado en Matemáticas” (Degree in Mathematics), University of Alicante, 0.4 credits (4 hours).
- 2022-2023 *Introducción al Lenguaje Matemático y a la Experimentación en Física*, 1<sup>st</sup> year course at the “Grado en Física” (Degree in Physics), University of Alicante, 3 credits (30 hours).
- 2022-2023 *Programas de cálculo científico y procesamiento de textos*, 1<sup>st</sup> year course at the “Grado en Matemáticas” (Degree in Mathematics), University of Alicante, 3 credits (30 hours).
- 2023-2024 *Introducción al Lenguaje Matemático y a la Experimentación en Física*, 1<sup>st</sup> year course at the “Grado en Física” (Degree in Physics), University of Alicante, 3 credits (30 hours).
- 2023-2024 *Programas de cálculo científico y procesamiento de textos*, 1<sup>st</sup> year course at the “Grado en Matemáticas” (Degree in Mathematics), University of Alicante, 3 credits (30 hours).

## LANGUAGES

Spanish (native), English C1 level (Cambridge), Catalan (native).

## REVIEWER FOR

MathSciNet, Mathematical Programming, Computational Optimization and Applications, Set-Valued and Variational Analysis, Journal of Mathematical Science, Journal of Optimization Theory and Applications, Fixed Point Theory.

## RESEARCH PAPERS ACCEPTED OR PUBLISHED

1. F.J. Aragón-Artacho, Y. Censor, A. Gibali, D. Torregrosa-Belén, The superiorization method with restarted perturbations for split minimization problems with an application to radiotherapy treatment planning. *Appl. Math. Comput.* 440, 127627 (2023)  
DOI: [10.1016/j.amc.2022.127627](https://doi.org/10.1016/j.amc.2022.127627)
2. F.J. Aragón-Artacho, R.I. Bot, D. Torregrosa-Belén: A primal-dual splitting algorithm for composite monotone inclusions with minimal lifting. *Numer. Algorithms* 93, 103-130 (2023)  
DOI: [10.1007/s11075-022-01405-9](https://doi.org/10.1007/s11075-022-01405-9)
3. F.J. Aragón-Artacho, Y. Malitsky, M.K. Tam, D. Torregrosa-Belén: Distributed forward-backward methods for ring networks. Published online in *Comput. Optim. Appl.*, August 2022. DOI: [10.1007/s10589-022-00400-z](https://doi.org/10.1007/s10589-022-00400-z)
4. F.J. Aragón-Artacho, D. Torregrosa-Belén: A direct proof of convergence of Davis-Yin splitting algorithm allowing larger stepsizes. *Set-Valued Var. Anal.* 30, 1011–1029 (2022).  
DOI: [10.1007/s11228-022-00631-6](https://doi.org/10.1007/s11228-022-00631-6)

## PUBLICATIONS UNDER REVIEWING PROCESS

1. F. Aragón-Artacho, P. Pérez-Aros, D. Torregrosa-Belén: The Boosted Double-Proximal Subgradient Algorithm for Nonconvex Optimization. Submitted July 2023, 29 pages. [arXiv: [2306.17144](https://arxiv.org/abs/2306.17144)]
2. W.L. Jung, D. Torregrosa-Belén, H. Wolkowicz: *The  $\omega$ -Condition Number* for Optimal Preconditioning and Low Rank Generalized Jacobian Updating. Submitted August 2023, 29 pages. [arXiv: [2308.13195](https://arxiv.org/abs/2308.13195)]

## PARTICIPATION IN CONFERENCES

- International Conference on Optimization: Challenges and Applications (in honor of Prof. Boris Mordukhovich 75<sup>th</sup> anniversary), The boosted double-proximal subgradient algorithm for nonconvex structured optimization, Alicante, Spain, 27–29/05/2024 (Invited talk).
- SIAM Conference on Optimization (OP23) , A splitting algorithm for structured non-convex optimization problems, Seattle, Washington, U.S., 31/05/2023–03/06/2023 (Invited talk).
- Fourth BYMATConference: Bringing Young Mathematicians Together, A primal-dual splitting algorithm for composite monotone inclusions with minimal lifting, Valencia, España (online), 9–11/11/2022.
- XI International Seminar in Optimization and Variational Analysis, A primal-dual splitting algorithm for composite monotone inclusions with minimal lifting, Alicante, Spain 22–23/09/2022 (Invited talk).
- 19th Workshop on Advances in Continuous Optimization (EUROPT) , Forward-Backward Methods with Reduced Dimensions, Lisbon, Portugal, 28–30/07/2022 (Invited talk).
- 32nd European Conference in Operational Research (EURO), A primal-dual splitting algorithm for composite monotone inclusions with minimal lifting, Espoo, Finland, 03–06/07/2022 (Invited talk).
- International Meeting on Functional Analysis and Continuous Optimization, A primal-dual splitting algorithm for composite monotone inclusions with minimal lifting, Elche, Spain, 15–16/06/2022 (Poster).
- VI Jornadas Doctorales de la Universidad de Murcia, Splitting methods: Improving the step size of the Davis–Yin splitting algorithm, Murcia, Spain (online due to COVID), 21–24/06/2021.

## SEMINARS GIVEN

- *A review of splitting algorithms with minimal lifting*, Department of Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario, Canada, 19/05/2023.

- *Splitting algorithms for monotone inclusions with minimal lifting*, Centro de Modelamiento Matemático (CMM), Santiago de Chile, Chile, 23/11/2022.

## **PARTICIPATION IN RESEARCH PROJECTS**

- 1. Name:** Structural variational analysis and optimization: theory and algorithms.  
**Institution:** University of Alicante  
**Type of project:** Competitive, Public.  
**Duration:** 1 January 2021 – 31 December 2023.  
**PI:** Abderrahim Hantoute, José Vicente Pérez.  
**Type of participation:** Collaboration.
- 2. Name:** Contribuciones al análisis variacional: fundamentos, dualidad, robustez y algoritmos.  
**Institution:** University of Alicante  
**Type of project:** Competitive, Public.  
**Duration:** 1 January 2019 – 31 December 2022.  
**PI:** Francisco J. Aragón Artacho.  
**Type of participation:** Collaboration.

## **STAYS IN OTHER CENTERS**

- Department of Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario, Canada, 15 December 2022 – 21 August 2023.
- Instituto de Ciencias de la Ingeniería, Universidad de O'Higgins, Rancagua, Chile, 18 November – 25 November 2022.
- Faculty of Mathematics, University of Vienna, Vienna, Austria, 1 November – 1 December 2021.
- Instituto Matemáticas de la Universidad de Sevilla, Sevilla, Spain, 1 November 2019 – 31 January 2020.

## **OTHER ACADEMIC TRAINING**

- EUROPT Summer School 2022, School of Science and Technology of University Nova de Lisboa, 02 July – 03 August 2022.
- EUROPT Summer School 2021 (online), 30 August – 1 September 2021.
- Doc Course on Geometric Analysis, University of Sevilla and University of Granada, September 2019 – October 2019.

## **FELLOWSHIPS**

- Grant PRE2019-090751 from “Ayudas para contratos predoctorales para la formación de doctores 2019” by the Ministerio de Ciencias e Innovación y Ministerio de Universidades from Spain and European Social Fund, September 2020 – August 2024.
- Grant “Beca IMUS de iniciación a la investigación” by the Instituto de Matemáticas de la Universidad de Sevilla for introducing Master students into mathematical research, November 2019 – January 2020
- Grant “Beca de colaboración” by the Ministerio de Educación y Formación Profesional of Spain for encouraging the participation of last year undergraduate students in university departments, October 2018 – July 2019.

## **OTHER MERITS**

- “Premio extraordinario de fin de grado”, University of Alicante, 2019, for the highest GPA among the graduates in Mathematics at the University of Alicante in the class of 2019.
- Second prize in the XIX Edition of the “Premios Jorge Juan de Matemáticas”, year 2018; competition in mathematics organized by the University of Alicante.
- First prize in the first term section of the XVIII Edition of the “Premios Jorge Juan de Matemáticas”, year 2017; competition in mathematics organized by the University of Alicante.