

# Arran Fernandez – Curriculum Vitae

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**Current address:** Department of Mathematics, Faculty of Arts and Sciences, Eastern Mediterranean University, William Shakespeare Street, 99628 Famagusta, Northern Cyprus, via Mersin-10, Turkey

**Date of birth:** 14 Jun 1995

**Citizenship:** United Kingdom

**Marital status:** bachelor

**Main research interests:** fractional calculus, fractional differential equations, Mittag-Leffler functions, operational calculus, Clifford analysis, zeta functions, asymptotic analysis

[MathSciNet profile](#)

[Google Scholar profile](#)

[ResearchGate profile](#)

[Web of Science profile](#)

[Personal website](#)

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## Education

- 2014–18      PhD, Department of Applied Mathematics & Theoretical Physics, University of Cambridge  
*Thesis title:* Analysis in Fractional Calculus and Asymptotics related to Zeta Functions  
*Supervisor:* Prof. Athanassios S. Fokas  
*Examiners:* Dr. Anthony Ashton, Prof. H. M. Srivastava
- 2013–14      MMath, University of Cambridge (Part III)  
*Result:* Distinction
- 2010–13      BA in Mathematics, University of Cambridge (Mathematical Tripos)  
*Result:* Senior Wrangler (top student in the final year) – youngest ever
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## Positions

- 2022–present      Associate Professor, Eastern Mediterranean University
- 2018–22      Assistant Professor, Eastern Mediterranean University

Temporary visits: Çankaya University (Sep–Oct 2017 and Jul–Aug 2018), University of Santiago de Compostela (Jun 2019), Balıkesir University (Feb 2020), Nazarbayev University (Aug–Sep 2021), University of Cambridge (Feb 2022 and Jun–Jul 2023), University of Ostrava (Aug 2022), Ghent University (Jan–Feb 2023)

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## Journal articles – accepted/published

**A. Fernandez**, C. Güder, W. Yasin, “Fractional powers of the quaternionic  $d$ -bar derivative”, *Advances in Applied Clifford Algebras*, accepted 2023.

S.S. Isah, **A. Fernandez**, M.A. Özarlan, “On univariate fractional calculus with general bivariate analytic kernels”, *Computational and Applied Mathematics* 42 (2023), 228. DOI: [10.1007/s40314-023-02363-1](https://doi.org/10.1007/s40314-023-02363-1)

S.S. Isah, **A. Fernandez**, M.A. Özarlan, “On bivariate fractional calculus with general univariate analytic kernels”, *Chaos, Solitons and Fractals* 171 (2023), 113495. DOI: [10.1016/j.chaos.2023.113495](https://doi.org/10.1016/j.chaos.2023.113495)

**A. Fernandez**, N. Rani, Ž. Tomovski, “An operational calculus approach to Hilfer–Prabhakar fractional derivatives”, *Banach Journal of Mathematical Analysis* 17 (2023), 33. DOI: [10.1007/s43037-023-00258-1](https://doi.org/10.1007/s43037-023-00258-1)

**A. Fernandez**, M. Al-Refai, “A rigorous analysis of integro-differential operators with non-singular kernels”, *Fractal and Fractional* 7(3) (2023), 213. DOI: [10.3390/fractalfract7030213](https://doi.org/10.3390/fractalfract7030213)

- M. Al-Refai, **A. Fernandez**, "Generalising the fractional calculus with Sonine kernels via conjugations", *Journal of Computational and Applied Mathematics* 427C (2023), 115159. DOI: [10.1016/j.cam.2023.115159](https://doi.org/10.1016/j.cam.2023.115159)
- A. Fernandez**, "Mikusinski's operational calculus for general conjugated fractional derivatives", *Boletín de la Sociedad Matemática Mexicana* 29(1) (2023), 25. DOI: [10.1007/s40590-023-00494-3](https://doi.org/10.1007/s40590-023-00494-3)
- S. Emin, **A. Fernandez**, "Incommensurate multi-term fractional differential equations with variable coefficients with respect to functions", *Mathematical Methods in the Applied Sciences* 46(8) (2023), pp. 8618–8631. DOI: [10.1002/mma.9006](https://doi.org/10.1002/mma.9006)
- C. Kürt, **A. Fernandez**, M.A. Özarslan, "Two unified families of bivariate Mittag-Leffler functions", *Applied Mathematics and Computation* 443 (2023), 127785. DOI: [10.1016/j.amc.2022.127785](https://doi.org/10.1016/j.amc.2022.127785)
- A. Fernandez**, J.E. Restrepo, D. Suragan, "A new representation for the solutions of fractional differential equations with variable coefficients", *Mediterranean Journal of Mathematics* 20 (2023), 27. DOI: [10.1007/s00009-022-02228-7](https://doi.org/10.1007/s00009-022-02228-7)
- N. Rani, **A. Fernandez**, "An operational calculus formulation of fractional calculus with general analytic kernels", *Electronic Research Archive* 30(12) (2022), pp. 4238–4255. DOI: [10.3934/era.2022216](https://doi.org/10.3934/era.2022216)
- K.D. Kucche, A.D. Mali, **A. Fernandez**, H.M. Fahad, "On tempered Hilfer fractional derivatives with respect to functions and the associated fractional differential equations", *Chaos, Solitons and Fractals* 163 (2022), 112547. DOI: [10.1016/j.chaos.2022.112547](https://doi.org/10.1016/j.chaos.2022.112547)
- A. Fernandez**, J.E. Restrepo, D. Suragan, "On linear fractional differential equations with variable coefficients", *Applied Mathematics and Computation* 432 (2022), 127370. DOI: [10.1016/j.amc.2022.127370](https://doi.org/10.1016/j.amc.2022.127370)
- A. Fernandez**, H.M. Fahad, "On the importance of conjugation relations in fractional calculus", *Computational and Applied Mathematics* 41 (2022), 246. DOI: [10.1007/s40314-022-01925-z](https://doi.org/10.1007/s40314-022-01925-z)
- A.D. Mali, K. Kucche, **A. Fernandez**, H.M. Fahad, "On tempered fractional calculus with respect to functions and the associated fractional differential equations", *Mathematical Methods in the Applied Sciences* 45(17) (2022), pp. 11134–11157. DOI: [10.1002/mma.8441](https://doi.org/10.1002/mma.8441)
- A. Fernandez**, J.E. Restrepo, D. Suragan, "Prabhakar-type linear differential equations with variable coefficients", *Differential and Integral Equations* 35 (2022), pp. 581–610. DOI: [10.57262/die035-0910-581](https://doi.org/10.57262/die035-0910-581)
- P.O. Mohammed, **A. Fernandez**, "Integral inequalities in fractional calculus with general analytic kernels", *Filomat* 37(11) (2023), pp. 3659–3669. DOI: [10.2298/FIL2311659M](https://doi.org/10.2298/FIL2311659M)
- A. Fernandez**, H.M. Fahad, "Weighted fractional calculus: a general class of operators", *Fractal and Fractional* 6 (2022), 208. DOI: [10.3390/fractalfract6040208](https://doi.org/10.3390/fractalfract6040208)
- N. Rani, **A. Fernandez**, "Mikusinski's operational calculus for Prabhakar fractional calculus", *Integral Transforms and Special Functions* 33(12) (2022), pp. 945–965. DOI: [10.1080/10652469.2022.2057970](https://doi.org/10.1080/10652469.2022.2057970)
- N. Rani, **A. Fernandez**, "Solving Prabhakar differential equations using Mikusinski's operational calculus", *Computational and Applied Mathematics* 41 (2022), 107. DOI: [10.1007/s40314-022-01794-6](https://doi.org/10.1007/s40314-022-01794-6)
- A. Fernandez**, M.A. Özarslan, C. Kürt, "A catalogue of semigroup properties for integral operators with Fox–Wright kernel functions", *Studies in Applied Mathematics* 148 (2022), pp. 1477–1518. DOI: [10.1111/sapm.12481](https://doi.org/10.1111/sapm.12481)
- A. Fernandez**, J.E. Restrepo, D. Suragan, "Linear differential equations with variable coefficients and Mittag-Leffler kernels", *Alexandria Engineering Journal* 61 (2022), pp. 4757–4763. DOI: [10.1016/j.aej.2021.10.028](https://doi.org/10.1016/j.aej.2021.10.028)
- A. Fernandez**, J.E. Restrepo, D. Suragan, "Lipschitz and Fourier type conditions with moduli of continuity in rank 1 symmetric spaces", *Monatshefte für Mathematik* 197 (2022), pp. 353–364. DOI: [10.1007/s00605-021-01621-w](https://doi.org/10.1007/s00605-021-01621-w)
- C.M.S. Oumarou, H.M. Fahad, J.-D. Djida, **A. Fernandez**, "On fractional calculus with analytic kernels with respect to functions", *Computational and Applied Mathematics* 40 (2021), 244. DOI: [10.1007/s40314-021-01622-3](https://doi.org/10.1007/s40314-021-01622-3)
- A. Fernandez**, J.-D. Djida, "Fractional differential relations for the Lerch zeta function", *Archiv der Mathematik* 117 (2021), pp. 515–527. DOI: [10.1007/s00013-021-01654-5](https://doi.org/10.1007/s00013-021-01654-5)
- H.M. Fahad, M. u. Rehman, **A. Fernandez**, "On Laplace transforms with respect to functions and their applications to fractional differential equations", *Mathematical Methods in the Applied Sciences* 46(7) (2023), pp. 8304–8323. DOI: [10.1002/mma.7772](https://doi.org/10.1002/mma.7772)
- A. Fernandez**, S. Ali, A. Zada, "On non-instantaneous impulsive fractional differential equations and their equivalent integral equations", *Mathematical Methods in the Applied Sciences* 44 (2021), pp. 13979–13988. DOI: [10.1002/mma.7669](https://doi.org/10.1002/mma.7669)

- R. Nigmatullin, D. Baleanu, **A. Fernandez**, "Balance equations with generalised memory and the emerging fractional kernels", *Nonlinear Dynamics* 104(4) (2021), pp. 4149–4161. DOI: [10.1007/s11071-021-06562-5](https://doi.org/10.1007/s11071-021-06562-5)
- H.M. Fahad, **A. Fernandez**, "Operational calculus for Caputo fractional calculus with respect to functions and the associated fractional differential equations", *Applied Mathematics and Computation* 409 (2021), 126400. DOI: [10.1016/j.amc.2021.126400](https://doi.org/10.1016/j.amc.2021.126400)
- M.A. Özarlan, **A. Fernandez**, "On a five-parameter Mittag-Leffler function and the corresponding bivariate fractional operators", *Fractal and Fractional* 5(2) (2021), 45. DOI: [10.3390/fractalfract5020045](https://doi.org/10.3390/fractalfract5020045)
- R. Daher, **A. Fernandez**, J.E. Restrepo, "Characterising extended Lipschitz type conditions with moduli of continuity", *Results in Mathematics* 76 (2021), 125. DOI: [10.1007/s00025-021-01433-2](https://doi.org/10.1007/s00025-021-01433-2)
- A. Fernandez**, S. Uçar, N. Özdemir, "Solving a well-posed fractional initial value problem by a complex approach", *Fixed Point Theory and Algorithms for Sciences and Engineering* 2021 (2021), 11. DOI: [10.1186/s13663-021-00696-2](https://doi.org/10.1186/s13663-021-00696-2)
- A. Fernandez**, C. Ustaoglu, M.A. Özarlan, "On the analytical development of incomplete Riemann–Liouville fractional calculus", *Turkish Journal of Mathematics* 45(3) (2021), pp. 1418–1443. DOI: [10.3906/mat-2101-64](https://doi.org/10.3906/mat-2101-64)
- M.A. Özarlan, **A. Fernandez**, "On the fractional calculus of multivariate Mittag-Leffler functions", *International Journal of Computer Mathematics* 99(2) (2022), pp. 247–273. DOI: [10.1080/00207160.2021.1906869](https://doi.org/10.1080/00207160.2021.1906869)
- H.M. Fahad, **A. Fernandez**, "Operational calculus for Riemann–Liouville fractional calculus with respect to functions and the associated fractional differential equations", *Fractional Calculus and Applied Analysis* 24(2) (2021), pp. 518–540. DOI: [10.1515/fca-2021-0023](https://doi.org/10.1515/fca-2021-0023)
- A. Fernandez**, D. Baleanu, "Classes of Operators in Fractional Calculus: A Case Study", *Mathematical Methods in the Applied Sciences* 44(11) (2021), pp. 9143–9162. DOI: [10.1002/mma.7341](https://doi.org/10.1002/mma.7341)
- A. Ahmadova, I.T. Huseynov, **A. Fernandez**, N.I. Mahmudov, "Trivariate Mittag-Leffler functions used to solve multi-order systems of fractional differential equations", *Communications in Nonlinear Science and Numerical Simulation* 97C (2021), 105735. DOI: [10.1016/j.cnsns.2021.105735](https://doi.org/10.1016/j.cnsns.2021.105735)
- H.M. Fahad, **A. Fernandez**, M. u. Rehman, M. Siddiqi, "Tempered and Hadamard-type fractional calculus with respect to functions", *Mediterranean Journal of Mathematics* 18 (2021), 143. DOI: [10.1007/s00009-021-01783-9](https://doi.org/10.1007/s00009-021-01783-9)
- A. Fernandez**, I. Husain, "Modified Mittag-Leffler functions with applications in complex formulae for fractional calculus", *Fractal and Fractional* 4(3) (2020), 45. DOI: [10.3390/fractalfract4030045](https://doi.org/10.3390/fractalfract4030045)
- I.T. Huseynov, A. Ahmadova, **A. Fernandez**, N.I. Mahmudov, "Explicit analytical solutions of incommensurate fractional differential equation systems", *Applied Mathematics and Computation* 390C (2021), 125590. DOI: [10.1016/j.amc.2020.125590](https://doi.org/10.1016/j.amc.2020.125590)
- A. Fernandez**, C. Kürt, M.A. Özarlan, "A naturally emerging bivariate Mittag-Leffler function and associated fractional-calculus operators", *Computational and Applied Mathematics* 39 (2020), 200. DOI: [10.1007/s40314-020-01224-5](https://doi.org/10.1007/s40314-020-01224-5)
- A. Fernandez**, T. Abdeljawad, D. Baleanu, "Relations between fractional models with three-parameter Mittag-Leffler kernels", *Advances in Difference Equations* 2020 (2020), 186. DOI: [10.1186/s13662-020-02638-5](https://doi.org/10.1186/s13662-020-02638-5)
- D. Baleanu, **A. Fernandez**, A. Akgül, "On a fractional operator combining proportional and classical differintegrals", *Mathematics* 8(3) (2020), 360. DOI: [10.3390/math8030360](https://doi.org/10.3390/math8030360)
- C. Kürt, M.A. Özarlan, **A. Fernandez**, "On a certain bivariate Mittag-Leffler function analysed from a fractional-calculus point of view", *Mathematical Methods in the Applied Sciences* 44 (2021), pp. 2600–2620. DOI: [10.1002/mma.6324](https://doi.org/10.1002/mma.6324)
- A. Fernandez**, C. Bouzouina, "Fractionalisation of complex  $\bar{d}$ -derivatives", *Complex Variables and Elliptic Equations* 66(3) (2021), pp. 437–475. DOI: [10.1080/17476933.2020.1722114](https://doi.org/10.1080/17476933.2020.1722114)
- A. Fernandez**, P.O. Mohammed, "Hermite–Hadamard inequalities in fractional calculus defined using Mittag-Leffler kernels", *Mathematical Methods in the Applied Sciences* 44(10) (2021), pp. 8414–8431. DOI: [10.1002/mma.6188](https://doi.org/10.1002/mma.6188)
- D. Baleanu, **A. Fernandez**, "On fractional operators and their classifications", *Mathematics* 7(9) (2019), 830. DOI: [10.3390/math7090830](https://doi.org/10.3390/math7090830)
- J.-D. Djida, **A. Fernandez**, I. Area, "Well-posedness results for fractional semi-linear wave equations", *Discrete & Continuous Dynamical Systems – Series B* 25(2) (2020), pp. 569–597. DOI: [10.3934/dcdsb.2019255](https://doi.org/10.3934/dcdsb.2019255)
- T. Abdeljawad, **A. Fernandez**, "On a new class of fractional difference-sum operators with discrete Mittag-Leffler kernels", *Mathematics* 7(9) (2019), 772. DOI: [10.3390/math7090772](https://doi.org/10.3390/math7090772)

- A. Fernandez**, C. Ustaoglu, "On some analytic properties of tempered fractional calculus", *Journal of Computational and Applied Mathematics* 366 (2020), 112400. DOI: [10.1016/j.cam.2019.112400](https://doi.org/10.1016/j.cam.2019.112400)
- A.K. Golmankhaneh, S. Ashrafi, D. Baleanu, **A. Fernandez**, "Brownian motion on Cantor sets", *International Journal of Nonlinear Science and Numerical Simulation* 21 (2020), pp. 275–281. DOI: [10.1515/ijnsns-2018-0384](https://doi.org/10.1515/ijnsns-2018-0384)
- A.K. Golmankhaneh, **A. Fernandez**, "Random variables and stable distributions on fractal Cantor sets", *Fractal and Fractional* 3(2) (2019), 31. DOI: [10.3390/fractalfract3020031](https://doi.org/10.3390/fractalfract3020031)
- H.M. Srivastava, **A. Fernandez**, D. Baleanu, "Some new fractional-calculus connections between Mittag-Leffler functions", *Mathematics* 7(6) (2019), 485. DOI: [10.3390/math7060485](https://doi.org/10.3390/math7060485)
- A. Fernandez**, "A complex analysis approach to Atangana–Baleanu fractional calculus", *Mathematical Methods in the Applied Sciences* 44(10) (2021), pp. 8070–8087. DOI: [10.1002/mma.5754](https://doi.org/10.1002/mma.5754)
- A. Fernandez**, M.A. Özarslan, D. Baleanu, "On fractional calculus with general analytic kernels", *Applied Mathematics and Computation* 354 (2019), pp. 248–265. DOI: [10.1016/j.amc.2019.02.045](https://doi.org/10.1016/j.amc.2019.02.045)
- A. Fernandez**, D. Baleanu, "On a new definition of fractional differintegrals with Mittag-Leffler kernel", *Filomat* 33(1) (2019), pp. 245–254. DOI: [10.2298/FIL1901245F](https://doi.org/10.2298/FIL1901245F)
- A.K. Golmankhaneh, **A. Fernandez**, "Fractal calculus of functions on Cantor tartan spaces", *Fractal and Fractional* 2(4) (2018), 30. DOI: [10.3390/fractalfract2040030](https://doi.org/10.3390/fractalfract2040030)
- J.-D. Djida, **A. Fernandez**, "Interior regularity estimates for a degenerate elliptic equation with mixed boundary conditions", *Axioms* 7(3) (2018), 65. DOI: [10.3390/axioms7030065](https://doi.org/10.3390/axioms7030065)
- A. Fernandez**, D. Baleanu, A.S. Fokas, "Solving PDEs of fractional order using the unified transform method", *Applied Mathematics and Computation* 339C (2018), pp. 738–749. DOI: [10.1016/j.amc.2018.07.061](https://doi.org/10.1016/j.amc.2018.07.061)
- A. Fernandez**, D. Baleanu, H.M. Srivastava, "Series representations for fractional-calculus operators involving generalised Mittag-Leffler functions", *Communications in Nonlinear Science and Numerical Simulation*, 67 (2019), pp. 517–527. DOI: [10.1016/j.cnsns.2018.07.035](https://doi.org/10.1016/j.cnsns.2018.07.035)
- A.K. Golmankhaneh, **A. Fernandez**, A.K. Golmankhaneh, D. Baleanu, "Diffusion on middle- $\xi$  Cantor sets", *Entropy* 20(7) (2018), 504. DOI: [10.3390/e20070504](https://doi.org/10.3390/e20070504)
- A. Fernandez**, A.S. Fokas, "Asymptotics to all orders of the Hurwitz zeta function", *Journal of Mathematical Analysis and Applications* 465(1) (2018), pp. 423–458. DOI: [10.1016/j.jmaa.2018.05.012](https://doi.org/10.1016/j.jmaa.2018.05.012)
- A. Fernandez**, "The Lerch zeta function as a fractional derivative", *Banach Center Publications* 118 (2019), pp. 113–124. Preprint available from arXiv:1804.07936. DOI: [10.4064/bc118-7](https://doi.org/10.4064/bc118-7)
- A. Fernandez**, "An elliptic regularity theorem for fractional partial differential operators", *Computational and Applied Mathematics* 37 (2018), pp. 5542–5553. DOI: [10.1007/s40314-018-0618-2](https://doi.org/10.1007/s40314-018-0618-2)
- A. Fernandez**, D. Baleanu, "The mean value theorem and Taylor's theorem for fractional derivatives with Mittag-Leffler kernel", *Advances in Difference Equations* 2018:86 (2018). DOI: [10.1186/s13662-018-1543-9](https://doi.org/10.1186/s13662-018-1543-9)
- A. Fernandez**, E.A. Spence, A.S. Fokas, "Uniform asymptotics as a stationary point approaches an endpoint", *IMA Journal of Applied Mathematics* 83(1) (2018), pp. 204–242. DOI: [10.1093/imamat/hxx042](https://doi.org/10.1093/imamat/hxx042)
- D. Baleanu, **A. Fernandez**, "On some new properties of fractional derivatives with Mittag-Leffler kernel", *Communications in Nonlinear Science and Numerical Simulation* 59 (2018), pp. 444–462. DOI: [10.1016/j.cnsns.2017.12.003](https://doi.org/10.1016/j.cnsns.2017.12.003)
- D. Baleanu, **A. Fernandez**, "A generalisation of the Malgrange–Ehrenpreis theorem to find fundamental solutions to fractional PDEs", *Electronic Journal of Qualitative Theory of Differential Equations* 15 (2017), pp. 1–12. DOI: [10.14232/ejqtde.2017.1.15](https://doi.org/10.14232/ejqtde.2017.1.15)

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## Chapters, editorials, errata – accepted/published

- A. Fernandez**, C. Güder, W. Yasin, "On fractional quaternionic d-bar derivatives", in: M. Ruzhansky, B. Torebek (eds.), *Extended Abstracts MWCAPDE 2023: Methusalem Workshop on Classical Analysis and Partial Differential Equations*, Springer, accepted 2023.

M.A. Özarslan, **A. Fernandez**, I. Area, "Editorial for Special Issue "Fractional Calculus and Special Functions with Applications"", *Fractal and Fractional* 5(4) (2021), 224. DOI: [10.3390/fractalfract5040224](https://doi.org/10.3390/fractalfract5040224)

**A. Fernandez**, "Mikusiński's Operational Calculus applied in General Classes of Fractional Calculus", in: A. Dzieliński, D. Sierociuk, P. Ostalczyk (eds.), *Proceedings of the International Conference on Fractional Differentiation and its Applications (ICFDA'21)*, Springer, Cham, 2022.

**A. Fernandez**, D. Baleanu, H.M. Srivastava, "Corrigendum to "Series representations for fractional-calculus operators involving generalised Mittag-Leffler functions" [Commun. Nonlinear Sci. Numer. Simulat. 67 (2019) 517–527]", *Communications in Nonlinear Science and Numerical Simulation* 82 (2020), 104963. DOI: [10.1016/j.cnsns.2019.104963](https://doi.org/10.1016/j.cnsns.2019.104963)

**A. Fernandez**, D. Baleanu, "Differintegration with respect to functions in fractional models involving Mittag-Leffler functions", in: *Proceedings of the International Conference on Fractional Differentiation and its Applications 2018*, SSRN 3275746 (2018). DOI: [10.2139/ssrn.3275746](https://doi.org/10.2139/ssrn.3275746)

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## Publications – completed/submitted

M. Al-Refai, **A. Fernandez**, "Comparison principles for a class of general fractional differential inequalities with applications", *Computational and Applied Mathematics*, under review.

I.A. Saleh, **A. Fernandez**, Ž. Tomovski, "On the possibility of Mikusiński's operational calculus for the fractional Laplacian", *Filomat*, submitted.

**A. Fernandez**, M. Saadetoğlu, "Algebraic results on rngs of singular functions", *Journal of Mathematical Analysis and Applications*, under review.

B. Gürbüz, **A. Fernandez**, "Editorial for Special Issue "Numerical and Analytical Methods for Differential Equations and Systems"", *Fractal and Fractional*, submitted.

**A. Fernandez**, S.C. Buranay, "The Peano–Sard theorem for Caputo fractional derivatives", *Journal of Computational and Applied Mathematics*, under review.

**A. Fernandez**, "Abstract algebraic construction in fractional calculus: parametrised families with semigroup properties", *Complex Analysis and Operator Theory*, under review.

**A. Fernandez**, "Tables of composition properties of fractional integrals and derivatives", preprint.

**A. Fernandez**, J.E. Restrepo, J.-D. Djida, "On the fractional Laplacian of a function with respect to another function", *Mathematical Methods in the Applied Sciences*, under review.

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## Conference administration

2023– Member of the International Program Committee, International Conference on Fractional Differentiation and its Applications (ICFDA) 2024.

2023– Organiser of special session "Fractional Calculus Operators and Their Applications", International Workshop on Operator Theory and its Applications (IWOTA) 2024.

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## Research grants

Feb–Jul 2023 Principal investigator, "Clifford Analysis Knowledge Exchange (CAKE)", Scientific Research Project (BAP-C), Eastern Mediterranean University. 35,000 TL grant.

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## Research presentations – international

- Aug 2023 "Parametrised families of fractional calculus operators: an algebraic viewpoint", contributed talk, *International Workshop on Operator Theory and Applications 2023* (Helsinki, Finland).
- Jul 2023 "Fractional d-bar derivatives in Clifford algebras", contributed talk, *International Society for Analysis, its Applications and Computation 2023* (São Paulo, Brazil).
- May 2023 "Fractional differential equations with variable coefficients: constructive series solutions", contributed talk, *International Arab Conference on Mathematics and Computations 2023* (Zarqa, Jordan).
- Apr 2023 "Fractional d-bar derivatives in  $\mathbb{C}$  and  $\mathbb{H}$ ", invited talk, *International Conference on Mathematical Methods in Physics 2023* (Marrakech, Morocco).
- Mar 2023 "Abstract algebra in fractional calculus: general parametrised families with semigroup properties", invited talk, *International Conference on Fractional Differentiation and its Applications 2022* (Ajman, UAE).
- Aug 2022 "Classifying semigroup properties for integral operators with general Fox–Wright kernels", invited talk, *Summer School – Singularities in Science and Engineering 2022* (Ghent, Belgium).
- Jul 2022 "Adapting the Fokas method to fractional-order PDEs", invited talk, *Summer School – Conference on Dynamical Systems and Complexity 2022* (Chania, Greece).
- Jul 2022 "On Connections and Novelty in Fractional Calculus", invited talk, *International Conference on Applied Analysis and Mathematical Modelling 2022* (Istanbul, Turkey – online due to Covid-19).
- Jun 2022 "Fractional versions of complex Wirtinger (d-bar) derivatives", contributed talk, *International Conference on Mathematical Analysis and Applications in Science and Engineering 2022* (Porto, Portugal).
- May 2022 "Think Before You Define: on Conjugation Relations and Other Connections", contributed talk, *International Conference on Computational Mathematics and Engineering Sciences 2022* (Ordu, Turkey).
- May 2022 "Bivariate Mittag-Leffler functions and associations with fractional calculus", contributed talk, *International Arab Conference on Mathematics and Computations 2022* (Zarqa, Jordan).
- Apr 2022 "Semigroup properties for multi-dimensional fractional integral operators", invited talk, *Fractional Differential Equations*, Isaac Newton Institute research programme (Cambridge, UK – partially online due to Covid-19).
- Feb 2022 "The fractional Laplacian of a function with respect to another function", contributed talk, *Deterministic and stochastic fractional differential equations and jump processes*, workshop in the *Fractional Differential Equations* research programme, Isaac Newton Institute (Cambridge, UK).
- Jan 2022 "On fractional Wirtinger derivatives for complex analysis", invited talk, *Fractional Differential Equations*, Isaac Newton Institute research programme (Cambridge, UK – partially online due to Covid-19).
- Jan 2022 "Making Hard Fractional Problems Easy: on Series and Conjugation", contributed talk, *Online International Symposium on Applied Mathematics and Engineering* (Istanbul, Turkey – online due to Covid-19).
- Nov 2021 "Mikusiński's Operational Calculus for Fractional Differential Equations", invited talk, *International Webinar on Algebra, Differential Equations & Its Applications 2021* (Coimbatore, India – online due to Covid-19).
- Sep 2021 "Mikusiński's Operational Calculus applied in General Classes of Fractional Calculus", contributed talk, *International Conference on Fractional Differentiation and its Applications 2020* (Warsaw, Poland – online due to Covid-19).
- Sep 2021 "Bivariate Mittag-Leffler functions and associations with fractional calculus", contributed talk, *International Conference on Applied Mathematics in Engineering 2020* (Balıkesir, Turkey – online due to Covid-19).

- Aug 2021 "Fractional versions of complex  $d$ -bar derivatives", contributed talk, *International Society for Analysis, its Applications and Computation 2021* (Ghent, Belgium – online due to Covid-19).
- Jun 2021 "Non-Instantaneous Impulsive Fractional Differential Equations: A Rigorous Survey", contributed talk, *International Conference on Applied Analysis and Mathematical Modelling 2021* (Istanbul, Turkey – online due to Covid-19).
- May 2021 "Variable-Coefficient Fractional Differential Equations and their Solutions", contributed talk, *International Conference On Mathematical Advances and Applications 2021* (Istanbul, Turkey – online due to Covid-19).
- Dec 2020 "Series Solutions to Fractional Differential Equations with Variable Coefficients", contributed talk, *International Conference on Applied Nonlinear Analysis and Soft Computing 2020* (Guwahati, India – online due to Covid-19).
- Dec 2020 "Modern Fractional Calculus: Two Important General Classes of Operators", invited talk, *Online Conference on Modern Fractional Calculus and its Applications 2020* (Istanbul, Turkey – online due to Covid-19).
- Jul 2020 "Classes of Operators: a Viewpoint on Fractional Calculus", invited talk, *International Conference on Nonlinear Analysis and its Applications 2020* (Latur, India – online due to Covid-19).
- Jul 2019 "Models and classifications in fractional calculus", contributed talk, *International Society for Analysis, its Applications and Computation 2019* (Aveiro, Portugal).
- Jul 2019 "A general class of fractional-calculus operators and their applications", invited talk, *International Istanbul Summer School in Applied Mathematics 2019* (Istanbul, Turkey).
- Jul 2019 "Complex integrals in fractional calculus", contributed talk, *International Conference on Computational Methods in Applied Sciences 2019* (Istanbul, Turkey).
- Apr 2019 "Incomplete forms of fractional integrals and derivatives", contributed talk, *International Conference on Computational Mathematics and Engineering Sciences 2019* (Antalya, Turkey).
- Jul 2018 "Differintegration with respect to functions in fractional models involving Mittag-Leffler functions", contributed talk, *International Conference on Fractional Differentiation and its Applications 2018* (Amman, Jordan).
- Jul 2018 "Generalisation and reduction of fractional models", invited talk, *International Conference on Fractional Differentiation and its Applications 2018* (Amman, Jordan).
- Jun 2018 "A series formula for Prabhakar fractional operators", contributed talk, *International Conference on Applied Mathematics in Engineering 2018* (Balikesir, Turkey).
- Sep 2017 "Asymptotics to all orders of the Hurwitz zeta function", contributed talk, *Number Theory Week 2017* (Poznań, Poland).
- May 2017 "New properties of fractional derivatives defined using Mittag-Leffler kernel", contributed talk, *International Conference on Recent Advances in Pure and Applied Mathematics 2017* (Ephesus, Turkey).
- Jul 2016 "Explicit solutions to FPDEs via the Fokas method and fundamental solutions", contributed talk, *International Conference on Fractional Differentiation and its Applications 2016* (Novi Sad, Serbia).
- Aug 2015 "Fractional calculus and the Fokas method", contributed talk, *Young Researchers in Mathematics 2015* (Oxford, UK).
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## Research presentations – local

Sep 2023	“Operational Calculus: Using Abstract Algebra to Solve Differential Equations”, invited talk, Sultan Qaboos University, Muscat, Oman. Online seminar.
Apr 2023	“Operational calculus: an algebraic method for differential equations”, invited talk, Sultan Moulay Slimane University, Beni Mellal, Morocco.
Jan 2023	“Fractionalising the complex Wirtinger (d-bar) derivatives”, invited talk, Ghent Analysis & PDE Centre, University of Ghent, Belgium.
Jan 2023	“Fractional differential equations: initialisation, singularity, and dimensions”, invited talk, SISSA (International School for Advanced Studies), Trieste, Italy. Online seminar.
Nov 2021	“Mikusinski’s Operational Calculus: an Algebraic Method for Differential Equations”, invited talk, Department of Mathematics, Nazarbayev University, Kazakhstan. Online due to Covid-19.
Aug 2020	“Fractional calculus and zeta functions”, invited talk, AIMS-Cameroon Research Centre Colloquium Series, African Institute for Mathematical Sciences, Cameroon. Online due to Covid-19.
Feb 2020	“Complex Integral Representations of Fractional Differintegrals”, invited talk, Department of Mathematics, Balikesir University, Turkey.
Jul 2019	“Zeta functions expressed as fractional derivatives”, invited talk, Seminar on Millennium Problems: Riemann Hypothesis, Institute of Mathematics, University of Santiago de Compostela, Spain.
Apr 2018	"Fractional PDEs, Novel Fractional Models, and Asymptotic Analysis of Zeta Functions", invited talk, Mathematics Department Seminar Series, Bilkent University, Ankara, Turkey.
Oct 2017	"Fractional Calculus and Analytic Number Theory", invited talk, Analysis and Applied Mathematics Seminar Series, Çankaya University, Ankara, Turkey.
May 2016	"Constructing solutions to linear fractional-order PDEs", departmental seminar, Cambridge Analysts Knowledge Exchange, Faculty of Mathematics, University of Cambridge, UK.
May 2016	"Fractional PDEs", contribution to graduate seminar series, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK.
Nov 2012	"Introduction to Fractional Calculus", series of 1-hour talks, Faculty of Mathematics, University of Cambridge, UK.
Oct 2012	"Introduction to Fractional Calculus", invited talk, PDE Working Group Seminar, Imperial College London, UK.

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## Teaching

**Supervisor** (small-group teaching sessions) at the University of Cambridge in the following undergraduate courses:

2013–18	Metric & Topological Spaces (2nd-year course)
2013–14	Linear Analysis (3rd-year course)
2014–18	Further Complex Methods (3rd-year course)
2014–15	Linear Algebra (2nd-year course)
2014–18	Number Theory (3rd-year course)
2015–18	Complex Analysis (2nd-year course)



This teaching was provided for the following colleges at the University of Cambridge: Christ's, Churchill, Clare, Corpus Christi, Downing, Emmanuel, Girton, Gonville & Caius, Homerton, Hughes Hall, Jesus, Magdalene, Murray Edwards, Newnham, Pembroke, Queens', Selwyn, St. Catharine's, St. Edmund's, St. John's.

**Lecturer** at the Eastern Mediterranean University for the following undergraduate and graduate courses:

2018–present	Calculus 1 (1st-year course)
2019–present	Calculus with Precalculus (1st-year course)
2019–20	Calculus 2 (1st-year course)
2021	Complex Analysis (2nd-year course)
2018–present	Fractional Calculus (master's/PhD course)
2021–present	Complex Analysis (master's/PhD course)
2022–present	Number Theory (master's/PhD course)
2020–22	Fractional Differential Equations (reading course for PhD students)

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## Academic editor

**Guest Editor** for Special Issues as follows:

2020–21	“Fractional Calculus and Special Functions with Applications”, <i>Fractal &amp; Fractional</i> (MDPI). Published as a book volume in 2022.
2021–22	“Numerical and Analytical Methods for Differential Equations and Systems”, <i>Fractal &amp; Fractional</i> (MDPI). To appear as a book volume.
2021–22	“Fractional Calculus and Applicable Analysis”, <i>Electronic Research Archive</i> (AIMS Press).

**Editorial Board** member for the following journals:

2020–present	Review Editor, <i>Frontiers in Applied Mathematics and Statistics</i> (Frontiers Media).
2020–present	Associate Editor, <i>Fixed Point Theory and Algorithms for Sciences and Engineering</i> (Springer).
2022–present	Advisory Editor, <i>Mathematical Methods in the Applied Sciences</i> (Wiley).

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## Graduate students

**Supervisor** for master's and PhD students:

2021	Ibrahim Abdullahi Saleh (MSc in Mathematics, Eastern Mediterranean University). Defence date 31/8/2021. Thesis title “Mikusinski's Operational Calculus for Fractional Laplacians”.
2022–23	Cihan Güder (MSc in Mathematics, Eastern Mediterranean University). Defence date 23/8/2023. Thesis title “Clifford Algebras and Clifford Analysis”. Co-supervised with Neşet Deniz Turgay.
2023–present	Ceren Özden (MSc in Mathematics, Eastern Mediterranean University). Ongoing.
2018–21	Chaima Bouzouina (PhD in Mathematics, Eastern Mediterranean University). Defence date 9/9/2021. Thesis title “The Interplay between Fractional Calculus and Complex Analysis”.
2020–23	Hafiz Muhammad Fahad (PhD in Mathematics, Eastern Mediterranean University). Defence date 17/5/2023. Thesis title “Generalised Operational Calculus Approach for Fractional Differential Equations”.

- 2021–23 Noosheza Rani (PhD in Mathematics, Eastern Mediterranean University). Defence date 12/6/2023. Thesis title "Mikusinski's Operational Calculus for Prabhakar Fractional Calculus".
- 2021–present Sunday Simon Isah (PhD in Mathematics, Eastern Mediterranean University). Co-supervised with Mehmet Ali Özarlan. Ongoing.
- 2021–present Yildiz Güzoğlu Yücel (PhD in Mathematics, Eastern Mediterranean University). Co-supervised with Nazim Mahmudov. Ongoing.
- 2022–present Walaa Yasin (PhD in Mathematics, Eastern Mediterranean University). Ongoing.

**Co-supervisor** for master's students:

- 2019–20 Duygu Malyali (MSc in Mathematics, Eastern Mediterranean University). Defence date 30/1/2020. Thesis title "(p,q)-Hahn Difference Operator". Co-supervised with Mehmet Ali Özarlan.
- 2020 Christian Maxime Steve Oumarou (MSc in Mathematics, African Institute of Mathematical Sciences – Cameroon). Defence date 15/5/2020. Thesis title "Operational Calculus In General Models Of Fractional Calculus". Co-supervised with Jean-Daniel Djida.
- 2019–20 Bubacarr Kandeh (MSc in Applied Mathematics & Computer Science, Eastern Mediterranean University). Defence date 6/7/2020. Thesis title "Stochastic Calculus with Applications to Finance". Co-supervised with Agamirza Bashirov.

**Jury member** for PhD students:

- 2019 Jean-Daniel Djida (PhD in Mathematics, University of Santiago de Compostela). Defence date 18/6/2019. Thesis title "Some Nonlocal Operators in Porous Medium Equations: the Extension Problem and Regularity Theory". Supervisors Prof. Juan Nieto and Prof. Ivan Area.
- 2022 Arzu Ahmadova (PhD in Mathematics, Eastern Mediterranean University). Defence date 3/2/2022. Thesis title "Methods for the Study of Stochastic Differential Equations and Applications: Stochastic Optimal Control Theory". Supervisor Prof. Nazim Mahmudov.

## Memberships

- 2020–present Affiliate Member of the American Mathematical Society (AMS).
- 2023–present Member of the International Society for Analysis, its Applications, and Computation (ISAAC).

## Reviewing

Invited peer reviewer for the following journals.

Springer (18 journals): *Acta Applicandae Mathematicae*; *Computational and Applied Mathematics*; *Advances in Difference Equations*; *Journal of Inequalities and Applications*; *Lithuanian Mathematical Journal*; *The European Physical Journal Special Topics*; *Acta Mathematica Sinica, English Series*; *International Journal of Dynamics and Control*; *Numerical Algorithms*; *Mediterranean Journal of Mathematics*; *Boletín de la Sociedad Matemática Mexicana*; *International Journal of Applied and Computational Mathematics*; *Fractional Calculus and Applied Analysis*; *Qualitative Theory of Dynamical Systems*; *Journal of Mathematical Sciences*; *Scientific Reports*; *Rendiconti del Circolo Matematico di Palermo*; *Journal of Applied Mathematics and Computing*

Elsevier (14 journals): *Communications in Nonlinear Science and Numerical Simulation*; *Applied Mathematics and Computation*; *Journal of Functional Analysis*; *Reports on Mathematical Physics*; *Journal of Advanced Research*; *Journal of King Saud University –*

Science; Examples and Counterexamples; Mathematics and Computers in Simulation; Chaos Solitons & Fractals; Results in Applied Mathematics; Partial Differential Equations in Applied Mathematics; Ain Shams Engineering Journal; Journal of Computational and Applied Mathematics; Alexandria Engineering Journal

Hindawi Publishing Corporation (8 journals): Complexity; Journal of Function Spaces; Advances in Mathematical Physics; Journal of Mathematics; Mathematical Problems in Engineering; International Journal of Mathematics and Mathematical Sciences; Journal of Applied Mathematics; Abstract and Applied Analysis

Taylor & Francis (7 journals): Journal of Taibah University for Science; International Journal of Computer Mathematics; Waves in Random and Complex Media; Integral Transforms and Special Functions; Research in Mathematics; Applied Mathematics in Science and Engineering; Arab Journal of Basic and Applied Sciences

De Gruyter (5 journals): Open Physics; Demonstratio Mathematica; Journal of Applied Analysis; International Journal of Nonlinear Science and Numerical Simulation; Mathematica Slovaca

Multidisciplinary Digital Publishing Institute (5 journals): Axioms; Fractal and Fractional; Mathematics; Mathematical and Computational Applications; Symmetry

Wiley (3 journals): Mathematical Methods in the Applied Sciences; Numerical Methods for Partial Differential Equations; International Journal of Circuit Theory and Applications

American Institute of Mathematical Sciences Press (3 journals): AIMS Mathematics; Evolution Equations and Control Theory; Discrete & Continuous Dynamical Systems – Series S

World Scientific (2 journals): International Journal of Biomathematics; Fractals

Natural Sciences Publishing (2 journals): Progress in Fractional Differentiation and Applications; Applied Mathematics and Information Sciences

Frontiers Media (2 journals): Frontiers in Physics; Frontiers in Applied Mathematics and Statistics

International Scientific Research Publications (2 journals): Journal of Nonlinear Sciences and Applications; Journal of Mathematics and Computer Science

Individual universities (9 journals): Filomat; Punjab University Journal of Mathematics; Mathematica Moravica; Scientia Iranica; Journal of Balikesir University Institute of Science and Technology; Journal of Applied Mathematics and Computational Mechanics; Computational Methods for Differential Equations; International Journal of Optimization and Control: Theories & Applications; Jordan Journal of Mathematics and Statistics

Miscellaneous publishers (15 journals): Revista Colombiana de Matemáticas (Colombian Mathematical Society); IEEE Access (Institute of Electrical and Electronics Engineers); International Journal of Analysis and Applications (Etamaths Publishing); Proceedings of the Royal Society A (Royal Society of London); Journal of Fractional Calculus and Applications (Fractional Calculus and Applications Group); Discontinuity, Nonlinearity, and Complexity (L&H Scientific Publishing); TWMS Journal of Pure and Applied Mathematics (Turkic World Mathematical Society); Applied Mathematics E-Notes (Electronic Library of Mathematics); Turkish Journal of Mathematics (TUBITAK); Proceedings of the Institute of Mathematics and Mechanics (National Academy of Sciences of Azerbaijan); Heliyon (Cell Press); Matematički Vesnik (Mathematical Society of Serbia); Contemporary Mathematics (Universal Wiser Publisher); Mathematica Applicanda (Polish Mathematical Society); Scientific Reports (Nature)

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## University administration

2018–present	Member of the Curriculum Committee, Department of Mathematics, Eastern Mediterranean University.
2020–present	Member of the Research Project Advisory Committee, Faculty of Arts and Sciences, Eastern Mediterranean University.
2022	Member of the Recruitment Committee, Department of Mathematics, Eastern Mediterranean University.

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## Awards and prizes

2023	Invited as one of 200 young researchers (among >900 applicants) at the 10 <sup>th</sup> Heidelberg Laureate Forum.
2022	Best presentation in parallel sessions, Online International Symposium on Applied Mathematics and Engineering, Biruni University (online due to Covid-19).

2020	325 Years of Fractional Calculus prize, Online Conference on Modern Fractional Calculus and its Applications, Biruni University (online due to Covid-19).
2019	2 <sup>nd</sup> prize for Young Scientists (based on publications and citations) at International Conference on Computational Methods in Applied Sciences, Istanbul Gelisim University.
2018	Boak Student Support Fund, Clare Hall, University of Cambridge.
2016	Honourable mention for one of the four best talks at 2 <sup>nd</sup> -year graduate student mini-conference, Department of Applied Mathematics and Theoretical Physics, University of Cambridge.
2016	Smith-Knight / Rayleigh-Knight Prize essay, Group 4, Faculty of Mathematics, University of Cambridge.
2014–18	Invitations to events for best teachers (as voted by students) at various University of Cambridge colleges: Pembroke, St. Catharine's, Emmanuel, Downing, Newnham, Girton.
2014–17	Full PhD scholarship, Engineering and Physical Sciences Research Council, United Kingdom.
2011–13	R A Watchman Prize (each year), Fitzwilliam College, University of Cambridge.
2013	Clothworkers Scholarship, Fitzwilliam College, University of Cambridge.
2012	Clough Scholarship, Fitzwilliam College, University of Cambridge.
2011	1912 Scholarship, Fitzwilliam College, University of Cambridge.

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## Other activities

2023	Overall champion, Boffin Brain quiz competition (online YouTube version of The 1% Show).
2023	"A Career in Mathematics", invited talk, English School of Kyrenia, Northern Cyprus.
2021	"A Career in Academic Mathematics", invited talk, Georgian National University, Tbilisi, Georgia.
2020	Radio appearance, <i>Jennifer Zamparelli on 2FM</i> , RTE2, Ireland.
2019	"A Career in Mathematics", invited talks, Doğa College Famagusta and Türk Maarif College Güzelyurt, Northern Cyprus.
2018	"Mathematics: a Passion between Arts and Sciences", invited talk, Abdul Hameed Shoman Foundation, Amman, Jordan.
2018	"The Career of a Genius", invited talks, Eastern Mediterranean University, Famagusta, Northern Cyprus.
2016–18	Founder and President of the Clare Hall Mathematical Association, a graduate student society at the University of Cambridge
2013	Newspaper coverage for being the youngest Senior Wrangler ever
2010	Newspaper coverage for being the youngest Cambridge student since 1773
2003	TV appearance, <i>The Terry and Gaby Show</i> , UMTV, United Kingdom
2001	TV appearance, <i>Menschen der Woche</i> (Person of the Week), SWR, Germany
2001–03	Newspaper coverage for being the youngest GCSE holder in UK history (GCSEs in Mathematics, at 3 levels)

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