Curriculum vitae of
Mohammed Hichem Mortad

Personal Information

Mohammed Hichem Mortad, Ph.D.
(Full) Professor
Department of Mathematics
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Faculty of Exact and Applied Sciences
University of Oran 1, Ahmed Ben Bella
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Born in Oran (Algeria), on June the 17^{th}, 1978.

Nationality : Algerian.

Martial Status : Male, Married (+03 children).

Studies

July, 1995	Baccalaureate.
June, 1999	$\approx$ B.Sc.+M.Sc. in Mathematics.
December, 2003	Ph.D. in Mathematical Analysis obtained at the University of Edinburgh (United Kingdom). Title : *"Normal products of self-adjoint operators and self-adjointness of the perturbed wave operator on $L^2(\mathbb{R}^n)$ ".* Thesis Supervisor : Professor Alexander M. Davie. Examiners : Professor J. Wright (Internal), *The University of Edinburgh* and Professor C. J.K. Batty (External), *The University of Oxford.*
February, 2008	"Habilitation" obtained at the University of Oran.

Academic Appointments

(Full) Professor : Department of Mathematics, Faculty of Exact and Applied Sciences, University of Oran (2013-$\cdots$), now : University of Oran 1, Ahmed Ben Bella.

Associate Professor : Department of Mathematics, Faculty of Science, University of Oran (2008-2013).

Assistant Professor : Department of Mathematics, Faculty of Science, University of Oran (2003-2008).

Publications List

Papers

1. S. Kebli, M. H. Mortad. On the reduction of powers of self-adjoint operators, *Quaest. Math.,* **48/7** (2025) 1127-1136.
2. M. H. Mortad. Generalizations of Weiss' version of the Fuglede-Putnam theorem for unbounded operators, *Expositiones Mathematicae*, (to appear). https ://doi.org/10.1016/j.exmath.2024.125606
3. M. S. Mokthar-Kharroubi, M. H. Mortad. On the commutativity of unbounded unclosed symmetric operators, Colloq. Math., **176 (2024)**, no. **1**, 107-120.
4. S. Dehimi, M. H. Mortad. On the closedness of the range of (fractional) powers of certain classes of possibly unbounded operators, *J. Math. Anal. Appl.*, **539 (2024)**, no. **1**, part 2, Paper No. 128492, 31 pp.
5. S. Dehimi, M. H. Mortad. Unbounded operators having self-adjoint, subnormal or hyponormal powers, *Math. Nachr.*, **296/9 (2023)** 3915-3928.
6. M. H. Mortad. Counterexamples related to unbounded paranormal operators, *Examples and Counterexamples* (to appear). https ://doi.org/10.1016/j.exco.2021.100017.
7. S. Dehimi, M. H. Mortad and A. Bachir. On the commutativity of closed symmetric operators, *Anal. Math.,* **49/3** (2023) 721-731 .
8. M. H. Mortad, Certain properties involving the unbounded operators $p(T)$, TT^*, and T^*T ; and some applications to powers and nth roots of unbounded operators, *J. Math. Anal. Appl.*, **525/2 (2023).** Paper No. 127159, 26 pp.
9. A. Bachir, M. H. Mortad, A. S. Nawal. On generalized powers of operators, *Rend. Circ. Mat. Palermo, Ser II.,* **72/4 (2023)** 2761-2769.
10. S. Dehimi, M. H. Mortad, A. Bachir. Unbounded generalizations of the Fuglede-Putnam theorem, *Rend. Istit. Mat. Univ. Trieste,* **54 (2022)**, Art. No. 7, 9 pages

11. Ch. Chellai, M. H. Mortad. The sandwich rule for sequences of self-adjoint operators and some applications, *Anal. Math.*, **48/4 (2022)** 991-996.

12. N. Frid, M. H. Mortad, S. Dehimi. When nilpotence implies the zeroness of linear operators, *Khayyam J. Math.*, **8/2 (2022)** 163-173.

13. M. Belahdji, S. Ayad, M. H. Mortad, Estimates for a Beam-Like Partial Differential Operator and Applications, *J. Appl. Anal.,* **28/2 (2022)** 181-188.

14. I. F. Z. Bensaid, S. Dehimi, B. Fuglede, M. H. Mortad, The Fuglede theorem and some intertwining relations, *Adv. Oper. Theory*, **6/1 (2021).** Paper No. 9, 8 pp.

15. S. Dehimi, M. H. Mortad, Z. Tarcsay. On the operator equations $A^n = A^*A$, *Linear Multilinear Algebra*, **69/9 (2021)** 1771-1778.

16. M. H. Mortad. On the existence of normal square and nth roots of operators, *J. Anal.*, **28/3 (2020)** 695-703.

17. S. Dehimi, M. H. Mortad, Chernoff-like counterexamples related to unbounded operators, *Kyushu J. Math.*, **74/1 (2020)** 105-108.

18. S. Dehimi, M. H. Mortad, Chernoff-like Counterexamples Related to Unbounded Operators, *Kyushu J. Math.*, **74/1 (2020)** 105-108.

19. M. H. Mortad, On the Invertibility of the Sum of Operators, *Anal. Math.*, **46/1 (2020)** 133-145.

20. M. H. Mortad, On the triviality of domains of powers and adjoints of closed operators, *Acta Sci. Math. (Szeged)*, **85 (2019)** 651-658.

21. M. Meziane, M. H. Mortad, Maximality of Linear Operators, *Rend. Circ. Mat. Palermo, Ser II.,* **68/3 (2019)** 441-451.

22. M. H. Mortad, Counterexamples Related to Commutators of Unbounded Operators, *Results Math.*, **74 (2019)**, no. 4, Paper No. 174.

23. M. H. Mortad, On The Absolute Value of The Product and the Sum of Linear Operators, *Rend. Circ. Mat. Palermo, Ser II.,* **68/2 (2019)** 247-257.

24. I. Boucif, S. Dehimi and M. H. Mortad, On The Absolute Value of Unbounded Operators, *J. Operator Theory*, **82/2 (2019)** 285-306.

25. S. Dehimi, M. H. Mortad, Generalizations of Reid Inequality, *Mathematica Slovaca,* **68/6 (2018)** 1439-1446.

26. F. Segueni, M. H. Mortad, A. Omrane, Approximate sentinels diffusion phenomena with pollution, *Mathematica Slovaca*, **68/5 (2018)** 1065-1074.

27. S. Dehimi, M. H. Mortad, *Right (Or Left) Invertibility of Bounded and Unbounded Operators and Applications to the Spectrum of Products*, Complex Anal. Oper. Theory, **12/3 (2018)** 589-597.

28. Il Bong Jung, M. H. Mortad, J. Stochel, *On normal products of selfadjoint operators*, Kyungpook Math. J., **57 (2017)** 457-471.

29. S. Dehimi and M. H. Mortad, *Bounded and Unbounded Operators Similar to Their Adjoints*, Bull. Korean Math. Soc., **54/1 (2017)** 215-223.

30. K. Gustafson, M. H. Mortad, *Conditions Implying Commutativity of Unbounded Self-adjoint Operators and Related Topics*, J. Operator Theory, **76/1 (2016)** 159-169.

31. M. H. Mortad, *A Criterion for the Normality of Unbounded Operators and Applications to Self-adjointness*, Rend. Circ. Mat. Palermo (2), **64 (2015)** 149-156.

32. A. Benali and M. H. Mortad, Generalizations of Kaplansky Theorem Related to Unbounded Linear Operators, Bull. Pol. Acad. Sci. Math., **62/2 (2014)** 181-186.

33. K. Gustafson, M. H. Mortad, *Unbounded Products of Operators and Connections to Dirac-Type Operators*, Bull. Sci. Math., Elsevier **138/5 (2014)**, 626-642.

34. Ch. Chellali and M. H. Mortad, *Commutativity up to a Factor for Bounded and Unbounded Operators*, J. Math. Anal. Appl., Elsevier, **419/1 (2014)**, 114-122.

35. M. H. Mortad, *Commutativity of Unbounded Normal and Self-adjoint Operators and Applications*, Operators and Matrices, **8/2 (2014)**, 563-571.

36. A. Chaban, M. H. Mortad, *Exponentials of Bounded Normal Operators*, Colloq. Math., **133/2 (2013)** 237-244. DOI : 10.4064/cm133-2-10.

37. M. H. Mortad, *On the Normality of the Unbounded Product of Two Normal Operators*, Concrete Operators, **1 (2013)**, 11-18.

38. A. Chaban, M. H. Mortad, *Global Space-Time L^p-Estimates for the Airy Operator on $L^2(\mathbb{R}^2)$ and Some Applications*, Glas. Mat. Ser. III, **47/67 (2012)**, 373-379.

39. M. H. Mortad, *An All-Unbounded-Operator Version of the Fuglede-Putnam Theorem*, Complex Anal. Oper. Theory, **6/6 (2012)**, 1269-1273.

40. M. H. Mortad, *On the Closedness, the Self-adjointness and the Normality of the Product of Two Unbounded Operators*, Demonstratio Math., **45/1 (2012)**, 161-167.

41. M. H. Mortad, *On the Normality of the Sum of Two Normal Operators*, Complex Anal. Oper. Theory, **6/1 (2012)**, 105-112.

42. M. H. Mortad, *Products and Sums of Bounded and Unbounded Normal Operators : Fuglede-Putnam Versus Embry*, Rev. Roumaine Math. Pures Appl., **56/3 (2011)**, 195-205.

43. M. H. Mortad, *Exponentials of Normal Operators and Commutativity of Operators : A New Approach*, Colloq. Math., **125/1 (2011)** 1-6.

44. M. H. Mortad, *An Implicit Division of Bounded and Unbounded Linear Operators Which Preserves Their Properties*, Glas. Mat. Ser. III, **46/66 (2011)**, 433-438.

45. M. H. Mortad, *On the Adjoint and the Closure of the Sum of Two Unbounded Operators*, Canad. Math. Bull., **54/3 (2011)** 498-505. Doi :10.4153/CMB-2011-041-7.

46. M. H. Mortad, *Global Space-Time L^p Estimates for the Wave Operator on L^2,* Rend. Semin. Mat. Univ. Politec. Torino, **69/1 (2011)** 91-96.

47. M. H. Mortad, *On a Beck-Putnam-Rehder Theorem*, Bull. Belg. Math. Soc. Simon Stevin, **17/4, (2010)** 737-740.

48. M. H. Mortad, *Similarities Involving Unbounded Normal Operators*, Tsukuba J. Math., **34/1, (2010)** 129-136.

49. M. H. Mortad, *Commutativity Up To A Factor : More Results And The Unbounded Case*, Z. Anal. Anwendungen : Journal for Analysis and its Applications, **29/3, (2010)** 303-307.

50. M. H. Mortad, *Yet More Versions of the Fuglede-Putnam Theorem*, Glasgow Math. J., **51/3, (2009)** 473-480.

51. M. H. Mortad, *On Some Product of Two Unbounded Self-adjoint Operators*, Integral Equations Operator Theory, **64/3, (2009)** 399-408.

52. M. H. Mortad, *Explicit Formulae for the Wave Operators of Perturbed Self-adjoint Operators*, J. Math. Anal. Appl. (Elsevier), **356/2, (2009)** 704-710.

53. B. Messirdi, M. H. Mortad, *On Different Products of Closed Operators*, Banach J. Math. Anal., **2/1, (2008)** 40-47.
54. B. Messirdi, M. H. Mortad, A. Azzouz, G. Djellouli, *A Topological Characterization of the Product of Two Closed Operators*, Colloq. Math., **112/2, (2008)** 269-278.
55. M. H. Mortad, *On L^p-Estimates for the Time-dependent Schrödinger Operator on L^2*, J. Ineq. Pure Appl. Math., **8/3, (2007)** Art. 80, 8pp.
56. M. H. Mortad, *Self-adjointness of the Perturbed Wave Operator on $L^2(\mathbb{R}^n)$, $n \geq 2$* , Proc. Amer. Math. Soc., **133/2, (2005)** 455-464.
57. M. H. Mortad, *An Application of the Putnam-Fuglede Theorem to Normal Products of Self-adjoint Operators*, Proc. Amer. Math. Soc., **131/10, (2003)** 3135-3141.

Books

1. M. H. Mortad, *Basic Linear Algebra : Exercises and Solutions*, World Scientific Publishing Co., (to appear). https ://doi.org/10.1142/12734.
2. M. H. Mortad, *The Fuglede-Putnam Theory*, Lecture Notes in Mathematics, Vol. **2322**, Springer, 2022.
3. M. H. Mortad, *Counterexamples in Operator Theory*, 2022. Birkhäuser/Springer, Cham.
4. M. H. Mortad, *Basic Abstract Algebra : Exercises and Solutions*, World Scientific Publishing Co., 2022.
5. M. H. Mortad, *An Operator Theory Problem Book*, World Scientific Publishing Co. (**2018**). (hardcover).
6. M. H. Mortad, *Introductory Topology : Exercises and Solutions*, World Scientific Publishing Co., **2014**. Second edition **2016**.
7. M. H. Mortad, *Exercices Corrigés d'Algèbre* (in French), Première Année L.M.D., edited by "Dar el Bassair", Algiers, Algeria **2012**.
8. M. H. Mortad, *Exercices Corrigés d'Analyse* (in French), Première Année L.M.D., edited multiple times ; over 10,000 copies sold. Published by Dar Houma, Algiers, **2009**.

Preprints

1. M. H. Mortad, Unbounded operators : (square) roots, nilpotence, closability and some related invertibility results. arXiv :2007.12027

2. M. H. Mortad, *A Contribution to the Fong-Tsui Conjecture Related to Self-adjoint Operators*. arXiv :1208.4346.

Recent Talks (outside Algeria)

March 2021 : *Constructions de contre-exemples en utilisant les matrices d'opérateurs non-bornés : Construction of counterexamples using matrices of unbounded operators*. Exposés des Lauréats du Prix Maurice Audin 2020 : talks given by Prix Maurice Audin's winners in 2020 (France).

July 2019 : *"Matrices of Unbounded Operators and Applications to Counterexamples"* (accepted talk), IWOTA, Instituto Superior Técnico, Lisbon, Portugal, 22-26 July **2019**.

September 2016 : *"Conditions Implying Commutativity of Unbounded Self-adjoint Operators"*, Journées de Théorie des Opérateurs, Université de Lyon 1, Claude Bernard (France), 22-23 September **2016**.

June 2015 : *"Conditions implying commutativity of self-adjoint operators"* (accepted talk), Harmonic Analysis, Function Theory, Operator Theory and Applications (in honor of Jean Esterle), IMB, Université de Bordeaux, France, 1-4 June **2015**.

June 2013 : *"Exponentials of Bounded Normal Operators and Commutativity"*, Tenth Advanced Course in Operator Theory and Complex Analysis, University of Seville (Spain), 10-12 June **2013**.

June 2012 : *"The Unbounded Product of Normal Operators"*, Ninth Advanced Course in Operator Theory and Complex Analysis, University of Seville (Spain), 11-14 June **2012**.

Awards

– Recipient of the Prix Maurice Audin (2020), which is a Franco-Algerian mathematics award ; the 2020 jury included Ngô Bao Châu, Claire Voisin, and Sylvie Benzoni.

Editorships

– The Arab Journal of Mathematical Sciences (2025-...).

Refereeing and Reviewing Tasks

1. Referee for the *Canadian Mathematical Bulletin*, in 2008/2009.
2. Referee for the *Bulletin of Mathematical Analysis and Applications*, in 2011.
3. Referee for *The African Diaspora J. Math.*, in 2012.

4. Referee for *Extracta Mathematicae*, in 2012.
5. Referee for *Complex Analysis and Operator Theory*, in 2014.
6. Referee for *Asian-European Journal of Mathematics*, in 2016/2017.
7. Referee for *Linear and Multilinear Algebra*, in 2017/2018.
8. Referee for *Journal of Theoretical Probability*, in 2018.
9. Referee for *Operators and Matrices*, in 2018 and again in 2019.
10. Referee for *Advances in Pure Mathematics* in 2019.
11. Referee for *Ukrainian Math. Journal* in 2020 (three times).
12. Referee for *Opuscula Mathematica* in 2020.
13. Referee for *Demonstratio Mathematica* in 2020.
14. Referee for *International Journal of Theoretical Physics* in 2020.
15. Referee for *Electronic Journal of Mathematical Analysis and Applications* in 2020.
16. Referee for *Open Mathematics* in 2022.
17. Referee for *Kyungpook Mathematical Journal* in 2022.
18. Referee for *Advances in Operator Theory* in 2022.
19. Referee for *Expositiones Mathematicae* in 2025.
20. Referee for *Analysis and Mathematical Physics* in 2025.
21. Referee for *Arab Journal of Mathematical Sciences* in 2025.
22. Many other requests have been declined due to lack of time.
23. Reviewer for "Zentralblatt Mathematics" and "Mathematical Reviews".

Administrative Assignments

1. President of the Scientific Committee of the Department of Mathematics, Faculty of Exact and Applied Sciences, University of Oran 1, Ahmed Ben Bella (2016-2019).
2. Member of the Scientific Committee of the University of Oran 1, Ahmed Ben Bella (2021-...).
3. Associate Faculty Dean, Faculty of Exact and Applied Sciences, University of Oran (2013).

4. Associate Department Head, Department of Mathematics, Faculty of Science, University of Oran (2011).
5. Member of the Scientific Committee of the Department of Mathematics, Faculty of Science, University of Oran (2007-2010), (2010-2013).
6. Member of the Scientific Committee of the Department of Mathematics, Faculty of Exact and Applied Sciences, University of Oran 1, Ahmed Ben Bella (2013-2016).

Main Courses Taught

1. Elementary Algebra.
2. Elementary Real Analysis.
3. Topology.
4. Functional Analysis.
5. Advanced Linear Algebra.
6. Bounded Linear Operators on Hilbert space.
7. Unbounded Linear Operators on Hilbert space.
8. Introductory Fourier Analysis.
9. Integral Equations.
10. Complex Analysis.
11. Distributions Theory.
12. Introduction to Partial Differential Equations.

Directed Theses

Ph.D. theses :

1. Mrs Fatima Zohra Mezeghrani, "On Some Abstract Elliptic Problems of Mixed Type", (2012).
2. Mrs Aïcha Chaban, "Criteria of Commutativity of Bounded and Unbounded Operators". University of Oran 1, Ahmed Ben Bella (2015).
3. Mrs Chérifa Chellali, "*Commutativity Up To A Factor*". University of Oran 1, Ahmed Ben Bella (2015).
4. Mr Abdelkader Benali, "*Non-normal Operators*". University of Oran 1, Ahmed Ben Bella (2015).
5. Mr Souheyb Dehimi, "Operators Similar to Their Adjoints". University of Oran 1, Ahmed Ben Bella (2017).
6. Mr. Mohammed Meziane, "Maximality of linear operators". University of Oran 1, Ahmed Ben Bella (2019).
7. Ms Imene Boucif, "On the absolute value of unbounded operators". University of Oran 1, Ahmed Ben Bella (2020).

8. Ms. Ikram Fatima Zohra Bensaid, "Intertwining Relations, Commutativity and Orbits" (2021), The University of Cadiz, Spain. A joint supervision with Professor Fernando Leon Saavedra (the University of Cadiz).
9. Mrs. Meriem Belahdji, "A priori estimates for some differential operators". University of Oran 1, Ahmed Ben Bella (2022).

M. Phil theses :

1. Mr Mohammed Soussane, "Inequalities Involving Linear Operators", (2014), the University of Oran.
2. Mr Mohammed Meziane, "The Unbounded Normal Product of Normal Operators", (2014), the University of Oran.
3. Mrs Chérifa Chellali, "On the Fuglede-Putnam Theorem", (2011), the University of Oran.
4. Mr Abdelkader Benali, "On Unbounded Normal Operators", (2011), the University of Oran.
5. Miss Aïcha Chaban, "L^p-Estimates for the Airy Operator on L^2", (2010), the University of Oran.

Master theses : Lots of them, some are :

1. Miss Marwa Ghalima, "A hundred of conditions equivalent to the normality of matrices". The University of Oran 1, Ahmed Ben Bella (2020).
2. Miss Imene Lehbab, "Matrices of unbounded operators and applications to counterexamples". The University of Oran 1, Ahmed Ben Bella (2019).
3. Mr Youcef Bouizem, "On the Sylvester Equation", The University of Oran 1, Ahmed Ben Bella (2017).
4. Mr Salim Boukhatem, "Matrix Inequalities", The University of Oran 1, Ahmed Ben Bella (2016).
5. Mr Mohammed Ghaicha, "Numerical Range of a Linear Operator", The University of Oran 1, Ahmed Ben Bella (2015).
6. Miss Imene Boucif, "Spectral Theorem for Unbounded Normal Operators", The University of Oran 1, Ahmed Ben Bella (2015).
7. Mr Abdellah Medjadj, "An Introduction to Unbounded Operators", (2013), The University of Oran.
8. Miss Imene Medjadj, "Some Theorems Involving Equations of Operators", (2011), The University of Oran.

Miscellaneous

My Erdős (and Halmos) number is 3 while my (John) von Neumann number is 4.

H-index=19, and 1070 citations (google scholar).

H-index=22, and 1236 citations (researchgate).

My Researchgate Score is 787.5.

I have served as both an internal and external examiner for numerous Ph.D. theses, including one at Université Claude Bernard Lyon 1 (France) in September 2016, and another at the University of Gabes (Tunisia) in 2025.

I am fluent in Arabic (mother tongue), French and English.

References

Available on request.

Oran on April, the 24^{th}, 2025.