ALESSANDRO MICHELANGELI – Research Outputs (2007-2023)

2007-2023 PUBLICATIONS (WITH PEER REVIEW) AND SUBMITTED PREPRINTS (CURRENTLY UNDER PEER REVIEW):

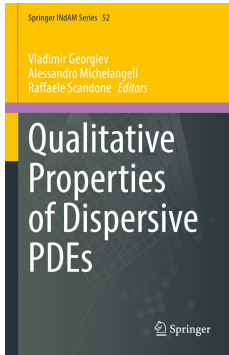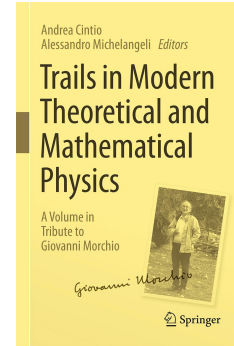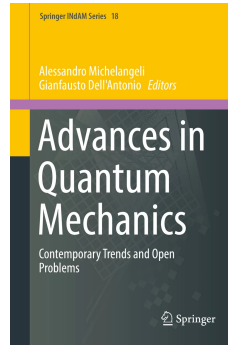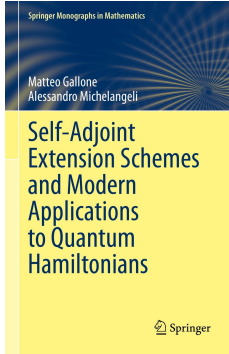73. N. A. Caruso, A. Michelangeli, *Open problems and perspectives on solving Friedrichs systems by Krylov approximation*, arXiv:2406.05777 (2024)

72. A. Michelangeli, *On creating new essential spectrum by self-adjoint extension of gapped operators*, Ann. Funct. Anal. 15, 18 (2024)

71. N. A. Caruso, A. Michelangeli, A. Ottolini, *On a comparison between absolute and relative self-adjoint extension schemes*, Quaestiones Mathematicae 1-19 (2023)

70. J. Lee, A. Michelangeli, *On the characterisation of fragmented Bose-Einstein condensation and its emergent effective evolution*, Nonlinearity, 36(12), 6364-6402 (2023)

69. N. Dugandžija, A. Michelangeli, I. Vojnović, *Generalised solutions to linear and non-linear Schrödinger-type equations with point defect: Colombeau and non-Colombeau regimes*, Expositiones Mathematicae 42(2), 125533 (2024)

68. V. Georgiev, A. Michelangeli, R. Scandone, *Schrödinger flow's dispersive estimates in a regime of rescaled potentials*, in "*Qualitative properties of dispersive PDEs*", INdAM-Springer series, vol. 52, 111-125 (2022)

67. V. Georgiev, A. Michelangeli, R. Scandone, *Standing waves and global well-posedness for the 2d Hartree equation with a point interaction*, Comm. Part. Diff. Eq. (2024)

66. M. Gallone, A. Michelangeli, E. Pozzoli, *Heat equation with inverse-square potential of bridging type across two half-lines* in "*Qualitative properties of dispersive PDEs*", INdAM-Springer series, vol. 52, 141-164 (2022)

65. A. Michelangeli, N. Santamaria *Lieb-Robinson bounds and growth of correlations in Bose mixtures*, Asymptotic Analysis 130, 233-259 (2022)

64. N. A. Caruso, A. Michelangeli, *Krylov solvability under perturbations of abstract inverse linear problems*, J. Appl. Anal. 29(1) 3-29 (2023)

63. A. Cintio, A. Michelangeli, *Self-adjointness in Quantum Mechanics: a pedagogical path* Quantum Stud.: Math. Found. 8(3), 271-306 (2021)

62. M. Gallone, A. Michelangeli, *Quantum particle across Grushin singularity* J. Phys. A: Math. Theor. 54 215201 (2021)

61. A. Michelangeli, *Models of zero-range interaction for the bosonic trimer at unitarity*, Rev. Math. Phys. 33 2150010 (2021)

60. V. Lotoreichik, A. Michelangeli, *Faber-Krahn inequalities for Schrödinger operators with point and with Coulomb interactions*, J. Math. Phys. 62, 012105 (2021)

59. A. Michelangeli, R. Scandone *On real resonances for three-dimensional Schrödinger operators with point interactions*, Mathematics in Engineering, 2021, 3(2), 1-14 (2021)

58. N. A. Caruso, A. Michelangeli, *Krylov solvability of unbounded inverse linear problems*, Integr. Equ. Oper. Theory, 93 (2021)

57. N. A. Caruso, A. Michelangeli, P. Novati, *On general convergence behaviours of finite-dimensional approximants for abstract linear inverse problems*, Asymptotic Analysis 127, 167-189 (2022)

56. M. Gallone, A. Michelangeli, E. Pozzoli, *Quantum geometric confinement and dynamical transmission in Grushin cylinder*, Rev. Math. Phys. 34 (07), 2250018 (2022)

55. N. A. Caruso, A. Michelangeli, *Convergence of the conjugate gradient method with unbounded operators*, Operator And Matrices 16, 35-68 (2022)

54. M. Gallone, A. Michelangeli, *Self-adjoint extensions with Friedrichs lower bound*, Complex Anal. Oper. Theory 14(7), 73 (2020)

53. M. Gallone, A. Michelangeli, A. Ottolini *Kreĭn-Višik-Birman self-adjoint extension theory revisited*, in "*Mathematical Challenges of Zero-Range Physics*", INdAM-Springer series, vol. 42, 239-304 (2020)

52. M. Khotyakov, A. Michelangeli, *Translation and adaptation of Birman's paper "On the theory of self-adjoint extensions of positive definite operators" (1956)*, in "*Mathematical Challenges of Zero-Range Physics*", INdAM-Springer series, vol. 42, 305-329 (2020)

51. A. N. Caruso, A. Michelangeli, P. Novati, *On Krylov solutions to infinite-dimensional inverse linear problems*, CALCOLO 56:32 (2019)

50. M. Gallone, A. Michelangeli, E. Pozzoli, *On Geometric Quantum Confinement in Grushin-type Manifolds*, Z. Angew. Math. Phys. (2019) 70:158

49. A. Michelangeli, R. Scandone, *Point-like perturbed fractional Laplacians through shrinking potentials of finite range*, Complex Anal. Oper. Theory 13, 3717-3752 (2019)

48. G. De Oliveira, A. Michelangeli, *Mean-field dynamics for mixture condensates via Fock space methods*, Rev. Math. Phys. 31, 1950027 (2019)

47. M. Gallone, A. Michelangeli, *Hydrogenoid spectra with central perturbations*, Rep. Math. Phys. 84, 215-243 (2019)

46. H. Cornean, A. Michelangeli, K. Yajima, *Two dimensional Schrödinger operators with point interactions: threshold expansions, zero modes and L^p-boundedness of wave operators*, Rev. Math. Phys. 31 (04)s, 1950012 (2019)

45. A. Michelangeli, P. T. Nam, A. Olgiati, *Ground state energy of mixtures of Bose gases*, Rev. Math. Phys. 31, 1950005 (2019)

44. M. Erceg, A. Michelangeli, *On contact interactions realised as Friedrichs systems*, Complex Anal. Oper. Theory 13, 703-736 (2019)

43. M. Gallone, A. Michelangeli, *Self-adjoint realisations of the Dirac-Coulomb Hamiltonian for heavy nuclei*, Anal. Math. Phys. 9, 585-616 (2019)

42. A. Michelangeli, G. Pitton, *Non-linear Schrödinger system for the Gross-Pitaevskii dynamics of a 2D binary condensate: a numerical analysis*, Rend. Mat. Appl. 39, 347-362 (2018)

41. S. Becker, A. Michelangeli, A. Ottolini, *Spectral properties of the 2+1 fermionic trimer with contact interactions*, Math. Phys. Anal. Geom., 21 (2018) no. 4, 35

40. A. Michelangeli, A. Olgiati, *Effective non-linear spinor dynamics in a spin-1 Bose-Einstein condensate*, J. Phys. A: Math. Theor. 51 (2018) 405201

39. A. Michelangeli, A. Ottolini, R. Scandone, *Fractional powers and singular perturbations of differential operators*, J. Math. Phys. 59, 072106 (2018)

38. M. Gallone, A. Michelangeli, *Discrete spectra for critical Dirac-Coulomb Hamiltonians*, J. Math. Phys. 59, 062108 (2018)

37. A. Michelangeli, A. Olgiati, R. Scandone, *The singular Hartree equation in fractional perturbed Sobolev spaces*, J. Nonlin. Math. Phys. 25, 558-588 (2018)

36. P. Antonelli, A. Michelangeli, R. Scandone, *Global, finite energy, weak solutions for the NLS with rough, time-dependent magnetic potentials*, Z. Angew. Math. Phys. (2018) 69:46

35. V. Georgiev, A. Michelangeli, R. Scandone, *On fractional powers of singular perturbations of the Laplacian*, J. Func. Anal. 275 (2018) no. 6, 1551-1602

34. G. Dell'Antonio, A. Michelangeli, R. Scandone. K. Yajima, *The L^p-boundedness of wave operators for the three-dimensional multi-centre point interaction*, Ann. Henri Poincaré 19 (2018), no. 1, 283-322.

33. A. Michelangeli, A. Ottolini, *Multiplicity of self-adjoint realisations of the (2+1)-fermionic model of Ter-Martirosyan–Skornyakov type*, Rep. Math. Phys. (2018) 81(1) 1-38

32. A. Michelangeli, A. Olgiati, *Gross-Pitaevskii non-linear dynamics for pseudo-spinor condensates*, J. Nonlin. Math. Phys. (2017), 24(3) 426-464

31. N. Antonić, M. Erceg, A. Michelangeli, *Friedrichs systems in a Hilbert space framework: solvability and multiplicity*, J. Differential Equations 263 (2017), no. 12, 8264–8294

30. A. Michelangeli, A. Ottolini, *On point interactions realised as Ter-Martyrosyan-Skornyakov operators*, Rep. Math. Phys. (2017) 79(2) 215-260

29. A. Michelangeli, A. Olgiati, *Mean-field quantum dynamics for a mixture of Bose-Einstein condensates*, Anal. Math. Phys. 7 (2017), 4:377-416 (2017 Alexander Vasiliev Award)

28. B. Hetenyi, A. Michelangeli, *Superfluidity via centre-of-mass reduced density and Drude weights*, SISSA preprint 19/2016/MATE (2016)

27. A. Michelangeli, P. Pfeiffer, *Stability of the (2+2)-fermionic system with zero-range interaction*, J. Phys. A: Math. Theor. 49 (2016) 105301 (selected for the 2016 JPA Highlight Collection)

26. A. Michelangeli, D. Monaco, *Stability of closed gaps for the alternating Kronig-Penney Hamiltonian*, Anal. Math. Phys. (2016) 6:67-83

25. G. Dell'Antonio, A. Michelangeli, *Schrödinger operators on half-line with shrinking potentials at the origin*, Asymptotic Analysis 97 (2016) 113-138

24. M. Correggi, G. Dell'Antonio, D. Finco, A. Michelangeli, A. Teta, *A Class of Hamiltonians for a Three-Particle Fermionic System at Unitarity*, Math. Phys. Anal. Geom., 18(1), 1-36 (2015)

23. A. Michelangeli, *Global well-posedness of the magnetic Hartree equation with non-Strichartz external fields*, Nonlinearity 28 (2015) 2743-2765

22. G. Dell'Antonio, A. Michelangeli, *Dynamics on a graph as the limit of the dynamics on a "fat graph"*, in Mathematical Technology of Networks, D. Mugnolo ed., Springer Proc. in Mathematics & Statistics 128 (2015), 49-64

21. A. Michelangeli, C. Schmidbauer, *Binding properties of the (2+1)-fermion system with zero-range interspecies interaction*. Phys. Rev. A 87 (2013) 053601

20. M. Correggi, G. Dell'Antonio, D. Finco, A. Michelangeli, A. Teta, *Stability for a system of N fermions plus a different particle with zero-range interactions*. Rev. Math. Phys. 24 (2012) 1250017

19. A. Michelangeli, B. Schlein, *Dynamical collapse of boson stars*. Comm. Math. Phys. 311 (2012) 645-687

18. A. Michelangeli, *Strengthened convergence of marginals to the cubic nonlinear Schrdinger equation*. Kinet. Relat. Models 3 (2010) 457-47

17. A. Michelangeli, O. Zagordi, *1D periodic potentials with gaps vanishing at $k = 0$*. Mem. Diff. Eq. Math. Phys 47 (2009) 133-158

16. L. Erdős, A. Michelangeli, B. Schlein, *Dynamical formation of correlations in a Bose-Einstein condensate.* Comm. Math. Phys. 289 (2009) 1171-1210

15. A. Michelangeli, *Equivalent definitions of asymptotic 100% B.E.C..* Nuovo Cimento B, 123 (2008) 181-192

14. A. Michelangeli, *Role of scaling limits in the rigorous analysis of Bose-Einstein condensation.* J. Math. Phys. (2007) 102102
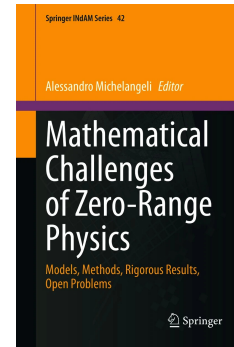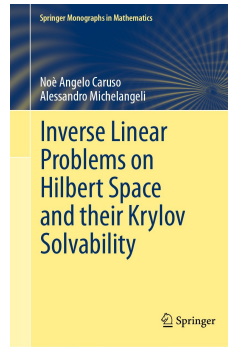
Authored books:

13. M. Gallone, A. Michelangeli, *Self-adjoint extension schemes and modern applications to quantum Hamiltonians*, Springer Monographs in Mathematics (2022)

12. N. A. Caruso, A. Michelangeli, *Inverse linear problems on Hilbert space and their Krylov solvability*, Springer Monographs in Mathematics (2021)

Edited monographs:

11. N. A. Caruso, A. Michelangeli, *Trails in modern theoretical and mathematical physics. A volume in tribute to Giovanni Morchio*, Springer (2023)

10. V. Georgiev, A. Michelangeli, R. Scandone editors, "*Qualitative properties of dispersive PDEs*", INdAM-Springer series, vol. 52 (2022)

9. A. Michelangeli editor, "*Mathematical Challenges of Zero-Range Physics*", INdAM-Springer series, vol. 42 (2021)

8. G. Dell'Antonio and A. Michelangeli editors, "*Advances in Quantum Mechanics: contemporary trends and open problems*", INdAM-Springer series, vol. 18 (2017)

Contributions to special volumes and monographs:

7. A. Michelangeli, *Teachings and legacy of a theoretical physicist.* In: Trails in modern theoretical and mathematical physics. A volume in tribute to Giovanni Morchio, p. 285-289, Springer (2023)

6. S. Albeverio, A. Michelangeli, *Giovanni Morchio (1948-2021).* In: Trails in modern theoretical and mathematical physics. A volume in tribute to Giovanni Morchio, p. 3-7, Springer (2023)

5. A. Michelangeli, *Zero-range and point-like singular perturbations: for a spillover to analysis, PDEs, and differential geometry.* Oberwolfach Reports, 44/2022, EMS (2022)

4. A. Michelangeli, G. Pitton, *Non-linear Schrödinger system for the dynamics of a binary condensate: theory and 2D numerics. Extended version.*, SISSA preprint 63/2016/MATE (2016)

3. A. Michelangeli, *Kreǐn-Višik-Birman self-adjoint extension theory revisited*, SISSA preprint 59/2015/MATE

2. A. Michelangeli, *Dynamical collapse of boson stars.* In: Classical and Quantum Mechanical Models of Many-Particle Systems. Oberwolfach Reports, 54/2022, EMS (2010)

1. A. Michelangeli, *The Born approximation in the problem of the rigorous derivation of the Gross-Pitaevskii equation.* In: Sense of Beauty in Physics, D'Elia M., Konishi K., Meggiolaro E. eds., p. 435-434, Pisa University Press (2007)