

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

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Massimo Moscolari CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	MOSCOLARI
NOME	MASSIMO
DATA DI NASCITA	29 MARZO 1991

Massimo MOSCOLARI

PERSONAL DATA

DATE OF BIRTH: 29 March 1991
WORK ADDRESS: Department of Mathematical Sciences, Aalborg University,
Skjernvej 4A, 9220 Aalborg Øst, Denmark
EMAIL: massimomoscolari@math.aau.dk
WEBSITE: <https://sites.google.com/view/massimomoscolari/home>

RESEARCH INTERESTS

MATHEMATICAL PHYSICS: Schrödinger operators, Wannier functions, Topological insulators, Scattering theory.

CURRENT AND PAST POSITIONS

08/2019-	Postdoc , Aalborg University, DK Mentor: Prof. H. CORNEAN.
04/2019-07/2019	Visiting Researcher For a detailed list of dates and places see the section Research Visits .

EDUCATION

11/2015-02/2019	PhD in Mathematics , Sapienza Università di Roma, IT Thesis: On the localization dichotomy for gapped quantum systems. Advisor: Prof. G. PANATI. Classification: Excellent .
10/2013-10/2015	Master in Theoretical Physics , Università di Pavia, IT Thesis: Spectral and dynamical properties of Maxwell-like operators. Supervisors: Prof. A. MARZUOLI and Prof. G. DE NITTIS. Mark: 110/110 cum laude .
03/2015-07/2015	Master thesis project , Friedrich-Alexander-Universität Erlangen-Nürnberg, DE Supervisor: Prof. G. DE NITTIS.
09/2010-09/2013	Bachelor in Physics , Università di Pavia, IT Thesis: Simmetrie locali e globali in teoria dei campi (Local and global symmetries in field theories). Supervisor: Prof. A. MARZUOLI. Mark: 110/110 cum laude .
09/2005-06/2010	High School Diploma , Liceo Scientifico F. Lussana, Bergamo, IT Mark: 100/100 .

PUBLICATIONS

6. (with H. Cornean and D. Monaco). **Beyond Diophantine Wannier diagrams: gap labelling for Bloch-Landau Hamiltonians.** To appear in J. Eur. Math. Soc. [ArXiv: 1810.05623v2](#) (2020).
5. (with G. De Nittis and K. Gomi) **The geometry of (non-abelian) Landau levels.** *J. Geom. Phys.* **152**, 103649 (2020).
4. (with D. Monaco) **Streda formula for charge and spin currents.** *Rev. Math. Phys.* **32**, 2060003 (2020).
3. (with H. Cornean and D. Monaco). **Parseval frames of exponentially localized magnetic Wannier functions.** *Commun. Math. Phys.* **371**, 1179--1230 (2019).
2. (with G. Panati). **Symmetry and localization for magnetic Schrödinger operators: Landau levels, Gabor frames, and all that.** *Acta Appl. Math.* **162**(1) (2019).
1. (with G. Marcelli, D. Monaco and G. Panati) **The Haldane model and its localization dichotomy.** *Rend. Mat. Appl.* **39**(2) (2018). Extended version on [ArXiv: 1909.03298](#).

Preprints

1. (with G. De Nittis, S. Richard and R. Tiedra de Aldecoa). **Scattering for one-dimensional coupled photonic crystals.** [ArXiv: 1904.03791v2](#) (2019).

In preparation

2. (with G. Marcelli and G. Panati). **Localization of a generalized Wannier basis implies Chern triviality in non-periodic insulators.** In preparation.
1. (with G. Panati). **Ultra Generalized Wannier Functions for systems without time-reversal symmetry and their relevance to transport.** In preparation.

RESEARCH VISITS

24/06–05/07/2019	University of Cologne, DE QM2 - Quantum Matter and Materials Guests Program. <i>Invited by MARTIN ZIRNBAUER.</i>
04/05–31/05/2019	Pontificia Universidad Católica de Chile, CL <i>Invited by GIUSEPPE DE NITTIS and RAFAEL TIEDRA DE ALDECOA.</i>
14/04–19/04/2019	Mittag-Leffler Institut, SE Thematic Semester: Spectral methods in mathematical physics. <i>Invited by SØREN FOURNAIS.</i>
15/09–01/10/2018	Centre de recherches mathématiques - Université de Montréal, CA Thematic Semester: Mathematical Challenges in Many-Body Physics and Quantum Information. <i>Invited by HORIA CORNEAN (Simons CRM Scholar-in-Residence Professorship).</i>
01/04–30/06/2018	Aalborg University, DK <i>Invited by HORIA CORNEAN.</i>

22/09–22/10/2017	Pontificia Universidad Católica de Chile, CL <i>Invited by GIUSEPPE DE NITTIS and RAFAEL TIEDRA DE ALDECOA.</i>
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AFFILIATIONS

06/2019–Present	Member of UMI (Italian Mathematical Society)
01/2017–Present	Member of INdAM-GNFM (Italian Group of Mathematical Physics)

TALKS

June 2020	On the localization dichotomy for gapped quantum systems Aalborg-Aarhus Mathematical Physics Seminar Zoom seminar
Jan. 2020	Magnetic perturbation theory and topological insulators Mathemetmatics Department Seminar Aarhus University, DK
Dec. 2019	Magnetic perturbation theory and topological insulators Oberseminar Mathematische Physik Universität Tübingen, DE
Nov. 2019	Magnetic perturbation theory and topological insulators Oberseminar Analysis Institut for Applied Mathematics, Bonn, DE
Oct. 2019	Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians The Analysis of Complex Quantum Systems: Large Coulomb Systems and Related Matters - Young Researchers Session C.I.R.M., Marseille, FR
Sept. 2019	Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians XXI Congresso Unione Matematica Italiana Università di Pavia, IT
Aug. 2019	Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians QMath14 Aarhus University, DK
June 2019	On the localization dichotomy for gapped quantum systems Leibniz Group seminar Institute of Theoretical Physics, University of Cologne, DE

May 2019	Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians Seminario FisMat Pontificia Universidad Católica de Chile, CL
April 2019	An introduction to the localization dichotomy Young seminars Mittag-Leffler Institut, SE Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians Thematic Semester: Spectral methods in mathematical physics. Mittag-Leffler Institut, SE
Feb. 2019	On the Localization Dichotomy for gapped quantum systems PhD Defense Sapienza Università di Roma, IT
Dec. 2018	Beyond Diophantine Wannier diagrams: gap labelling for Bloch–Landau Hamiltonians Seminari di Fisica Matematica Università di Roma Tre, IT

TEACHING EXPERIENCE

02/2020-06/2020	Lecturer for the course of Integration Theory ¹ Bachelor Degree in Mathematics <i>Aalborg University</i>
10/2016–01/2017	Tutor for the OFA Course in Mathematics <i>Sapienza Università di Roma</i> Head: Prof. C. Maffei.
10/2014–09/2015	Teaching assistant in Physics <i>Department of Pharmacy, Università di Pavia</i> Head: Prof. M. Geddo. Teaching assistant in Physics <i>Department of Engineering, Università di Pavia</i> Head: Prof. L. Tartara. Teaching assistant in Physics <i>Department of Medicine and Surgery, Università di Pavia</i> Head: Prof. F. Boffelli.
10/2013–09/2014	Teaching assistant in Physics <i>Department of Engineering, Università di Pavia</i> Head: Prof. L. Tartara.

¹ Half of the course was taught remotely using Microsoft Teams due to the Coronavirus pandemic.

ATTENDED WORKSHOPS AND CONFERENCES

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| 2019 | <p>The Analysis of Complex Quantum Systems: Large Coulomb Systems and Related Matters
21-25 October, CIRM Marseille, FR</p> <p>Workshop on Quantum Transport and Universality: from Topological Materials to Quantum Hydrodynamics
23-25 September, Roma, IT</p> <p>XXI Congresso Unione Matematica Italiana
2-7 September, Pavia, IT</p> <p>QMath14: Mathematical Results in Quantum Physics
12-16 August, Aarhus, DK</p> |
| 2018 | <p>Solid Math 2018
1-3 August, Montreal, CA</p> <p>XIX International Congress on Mathematical Physics (ICMP) 2018
23-28 July, Montreal, CA</p> <p>Young Researcher Symposium, ICMP 2018
20-21 July, Montreal, CA</p> <p>Analytical & Numerical Methods in Quantum Transport
28-30 May, Aalborg, DK</p> <p>Mathematical Challenges in Quantum Mechanics
19-24 February, Rome, IT</p> <p>Trails in Quantum Mechanics and Surroundings
29-30 January, SISSA, IT</p> |
| 2017 | <p>Spectral Days 2017
3-7 April, Stuttgart, DE</p> <p>Macroscopic Limits of Quantum Systems
30 March-1 April, Munich, DE</p> <p>Workshop on Topological Insulators and NLS
13-17 February, Freudenstadt, DE</p> |
| 2016 | <p>Kinetic theory and its neighbours
20-21 October, L'Aquila, IT</p> <p>Condensed Matter and Critical Phenomena
5-7 September, Frascati, IT</p> |
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	Contemporary Trends in the Mathematics of Quantum Mechanics 4-8 July, Rome, IT
	Solid Math 2016 26-28 May, Aalborg, DK
	Spectral Theory of Novel Materials 18-22 April, Marseille, FR
	Mathematical Challenges in Quantum Mechanics 8-13 February, Bressanone, IT
2015	Trails in Quantum Mechanics and Surroundings 2015 8-10 July, Como, IT
	27th Indian-Summer School on Graphene: the Bridge between Low and High-Energy Physics 14-18 September 2015, Prague, CZ

AWARDS, GRANTS AND SCHOLARSHIPS

July 2020	Winner of “Premio INdAM-SIMAI-UMI 2019” Prize for one of the best PhD theses in mathematics written in an Italian university during the years 2017-2019 (one out of four prizes).
July 2017	Winner of “Bando Ricerca Scientifica 2017” for a research project entitled: “Metodi matematici applicati alle proprietà di trasporto negli isolanti topologici”. Sapienza Università di Roma
Oct. 2016	Winner of “Bando n.5/2016” for tutoring the OFA course. Sapienza Università di Roma
Sept. 2015	Winner of a PhD Scholarship at the Mathematics Department. Sapienza Università di Roma
Jan. 2015	Winner of an Erasmus Traineeship Scholarship “Bet for Jobs”. Università di Pavia
July 2014	Winner of “Bando per selezione studenti per attività di tutoraggio a.a. 2014/2015” at the Department of Medicine and Surgery. University of Pavia.
July 2014	Winner of “Bando per selezione studenti per attività di tutoraggio a.a. 2014/2015” at the Department of Engineering. University of Pavia.

- April 2014 Winner of “Bando per selezione studenti per attività di tutoraggio a.a. 2014/2015” at the Department of Pharmacy.
University of Pavia.
- May 2013 Winner of “Bando per selezione studenti per attività di tutoraggio a.a. 2014/2015” at the Department of Engineering.
University of Pavia.

LANGUAGES

ITALIAN: Native
ENGLISH: Fluent Cambridge First Certificate. (Obtained in June 2005)
GERMAN: Basic

TECHNICAL SKILLS

Good Knowledge: \LaTeX , Microsoft Teams for remote teaching, Html, Css, Java, C++ and Windows Operative System.

Basic Knowledge: Scilab and Linux Operative System.

ORGANIZATIONAL SKILLS

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| 05/2014–10/2015 | Physics Students Representative in the Didactic Council (Consiglio Didattico) and the Department Council (Consiglio di Dipartimento). |
| 12/2013–10/2015 | Member of the Joint Committee (Commissione Paritetica) of the Physics Department. |

INTERESTS AND ACTIVITIES

I am an Advanced Scuba Open Water Diver. (PADI License obtained in 2010)
I am interested in music. I have been playing the saxophone since I was sixteen.
I am fond of astronomy and I have developed good observational skills.

REFERENCES

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| Prof. Dr. G. Panati | <i>Dipartimento di Matematica, Sapienza - Università di Roma</i>
Piazzale Aldo Moro 2, 00185, Roma, Italy
panati@mat.uniroma1.it |
| Prof. Dr. H. Cornean | <i>Department of Mathematical Sciences, Aalborg University</i>
Skjernvej 4A, DK-9220, Aalborg, Denmark
cornean@math.aau.dk |
| Prof. Dr. G. De Nittis | <i>Facultad de Matemática & Instituto de Física,</i>
<i>Pontificia Universidad Católica de Chile</i>
Vicuña Mackenna 4860, Macul, Santiago 6904441, Chile
gidenittis@mat.puc.cl |

Data

15/07/2020

Luogo

Aalborg