

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n._1_ posto/i di Ricercatore a tempo determinato ai sensi dell'art.24, comma 3, lettera b) della Legge 240/2010 per il settore concorsuale _02/B2 FISICA TEORICA DELLA MATERIA__ ,

settore scientifico-disciplinare __FIS/03 - FISICA TEORICA DELLA MATERIA__

presso il Dipartimento di __FISICA "ALDO PONTREMOLI"__,

(avviso bando pubblicato sulla G.U. n. 68 del 01/09/2020) Codice concorso 4445

[Nome e cognome] CURRICULUM VITAE

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

COGNOME	DANIELI
NOME	CARLO
DATA DI NASCITA	[25, Luglio, 1987]

**INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)**

Personal data:

-Full Name: Carlo Danieli

Date of Birth: 25/07/1987

Place of Birth: Schio (VI) Italy

Citizenship: Italian

Email: cdanieli@pks.mpg.de

Academic background

Current Position:

- Dec. 2019/Now - Research Fellow in the Max Planck Institute for the Physics of Complex Systems (MPI-PKS), Dresden, Germany.
Team leader: Prof. Holger Kantz;

Former Position:

- Feb. 2017/Nov. 2019 - Research Fellow in the Center for Theoretical Physics of Complex Systems (PCS), Institute for Basic Science (IBS), Daejeon, South Korea.
Team leader: Prof. Sergej Flach;

Education:

- Feb. 2013/ Feb. 2017 - PhD student at CTCP/NZIAS, Massey University.
Supervisor: Prof. Sergej Flach;
CoSupervisors: Dr. Joshua D. Bodyfelt, Dist. Prof. Gaven J. Martin.
Thesis: Advances in Classical and Quantum wave Dynamics on Quasiperiodic Lattices
- Oct. 2010/ Jul. 2012 - Master in Mathematics, Padua University; Supervisor: Dr. Antonio Ponno;
Thesis: Energy Localization in DNA Models.
- Oct. 2007/ Sept. 2010 - Bachelor in Mathematics, Padua University; Supervisor: Professor Giancarlo Benettin;
Thesis: The KAM Theorem.

Visiting experiences:

- Erasmus Program at Humboldt Universität zu Berlin (Germany); Period: 2 semesters - Fall 2010 and Summer 2011;
- Center for Theoretical Physics of Complex Systems, Institute for Basic Science, Daejeon (South Korea); First visits: June - August 2015;
Second visit: May - August 2016.

Teaching experiences:

- Systems and Models in the Natural Sciences, held with prof. S. Flach, Massey University, Academic year 2015-2016;
- Physics lab supervisors at Massey University, 5 semesters between 2013 and 2015

Academic background

Areas of expertise:

Flat band networks;

Quantum many-body dynamics;

Many-body flat band localization phenomena;

Discrete and compact breathers;

Interacting many body systems and ergodicity breaking;

Nonlinear dynamics;

Weakly non-integrable Hamiltonian systems;

Fano resonances;

Disordered and quasiperiodic lattices;

Anderson localization;

Symplectic Integration for time-evolution of non-integrable systems.

Active collaborations:

Prof. Sergej Flach, prof. Alexei Andreanov, and dr. Mikhail Fistul (PCS-IBS)

Prof. David Campbell (Boston university)

Prof. Zhigang Chen (San Francisco State university and Nankai university)

Prof. Holger Kantz (MPI-PKS)

Prof. Charampolos Skokos, and mr. Bertin Many Manda (University of Cape Town)

Dr. Mithun Thudiyangal (University of Amherst Massachusetts)

Dr. Stefano Iubini (University of Padua)

Computational Skills:

Fortran90, C++, Mathematica, Phyton.

Editorial activities:

Guest editor jointly with Dr. Stefano Iubini (University of Padua), Dr. Mithun Thudiyangal (PCS-IBS), Prof. Antonio Politi (University of Aberdeen) and A.Prof. Wojciech De Roeck (Catholic University of Leuven) to edit a special issue Non-Ergodicity in dynamical systems for the journal Chaos, Solitons and Fractals

Referral activities:

Physical Review X, Physical Review Letter, Physical Review B, Physical Review E, Europhysics Letters.

Awards:

Best poster award at "Quantization of dissipative chaos: ideas and means", Physikzentrum Bad Honnef 2019

EPL distinguished referee 2017;

INMS Postgraduate Conference 2014 winner (best talk).

Language:

Italian (native), English (proficient), Korean (beginner).

References:

Prof. Sergej Flach - s.flach@ibs.re.kr

Prof. David K. Campbell - dkcampbe@bu.edu

Prof. Alexei Andreanov: aalexei@ibs.re.kr

Bibliometria

H-index: 9

H-index10: 8

Citazioni totali: 267

Fonte, google scholar (data: 15/09/2020)

Link: <https://scholar.google.com/citations?user=ciOfxQgAAAAJ&hl=en>

Publication List

Research accomplishment

During my first years as young scientist, I released several articles (see list below) most of which have been published in Physical Review journals. Among these three are Physical Review Letters, and the latest two ones have been obtained pursuing a research stream focused on the study of the existence of excursions out of equilibrium and the ergodization time-scale of classical systems close to integrability. These two letters, as well as related publications and preprints, have been produced during the period 2018-2019 by a subgroup of young researchers belonging to group of prof. Sergej Flach (myself, one postdoc and one phd student) over which I acted as a deputy guide on behalf of our common supervisor. These results have been also presented in several scientific events. Among these, I highlight the invited talk at the American Physical Society March meeting 2019, held in Boston (MA).

Published:

1. C. Danieli, A. Andreanov, and S. Flach Many-body flat band localization [Phys. Rev. B 102, 041116\(R\) \(2020\)](#)
2. C. Danieli, and T. Mithun
Casting dissipative compact states in coherent perfect absorbers [Phys. Rev. Research 2, 013054 \(2020\)](#)
3. S. Xia, C. Danieli, W. Yan, D. Li, S. Xia, J. Ma, H. Lu, D. Song, L. Tang, S. Flach, and Z. Chen

Observation of quincunx-shaped and dipole-like flat band states in photonic rhombic lattices without band- touching

[APL Photonics 5 016107 \(2020\)](#)

4. C. Danieli, B. Many Manda, T. Mithun, and Ch. Skokos
Computational efficiency of numerical integration methods for the tangent dynamics of many-body Hamiltonian systems in one and two spatial dimensions
[Math. in Eng. 1\(3\): 447-488, \(2019\)](#)
5. C. Danieli, T. Mithun, Y. Kati, D.K. Campbell, and S. Flach
Dynamical glass in weakly non-integrable Klein-Gordon chains
[Phys. Rev. E 100, 032217 \(2019\)](#)
6. T. Mithun, C. Danieli, Y. Kati, and S. Flach
Dynamical glass phase and ergodization times in Josephson junction chains
[Phys. Rev. Lett. 122, 054102 \(2019\)](#)
7. T. Mithun, Y. Kati, C. Danieli, and S. Flach
Weakly nonergodic dynamics in the Gross-Pitaevskii lattice
[Phys. Rev. Lett. 120, 184101 \(2018\)](#)
8. C. Danieli, A. Maluckov, and S. Flach
Compact discrete breathers on flat band networks
[Low Temperature Physics 44, 865 \(2018\)](#)
9. C. Danieli, D.K. Campbell, and S. Flach
Intermittent many-body dynamics and equilibrium
[Phys. Rev. E 95, 060202\(R\) \(2017\)](#)
10. H. Hatami, C. Danieli, J. D. Bodyfelt, and S. Flach
Quasiperiodic driving of Anderson localized waves in one dimension
[Phys. Rev. E 93, 062205 \(2016\)](#)
11. C. Danieli, J. D. Bodyfelt, and S. Flach
Flat band engineering of mobility edges
[Phys. Rev. B 91, 235134 \(2015\)](#)
12. C. Danieli, K. Rayanov, B. Pavlov, G. Martin, and S. Flach
Approximating metal-insulator transitions
[Int. J. of Mod. Phys. B 29, 1550036 \(2015\)](#)
13. J. D. Bodyfelt, D. Leykam, C. Danieli, X. Yu, and S. Flach
Flat bands under correlated perturbations
[Phys. Rev. Lett. 113, 236403 \(2014\)](#)

14. L.Morales-Molina, E.Doerner, C.Danieli, and S.Flach
Resonant metallic states in driven quasiperiodic lattices: Aubry-Andre localization by design
[Phys. Rev. A 90, 043630 \(2014\)](#)

Book chapters:

1. A. Ramachandran, C. Danieli, and S. Flach
Fano resonances in flat band networks
[Fano resonances in optics and microwaves, Springer series in optical sciences 219 \(2018\)](#)

Submitted:

1. C. Danieli, A. Andreanov, T. Mithun, and S. Flach
Caging of short-range interactions in all bands flat lattices: Part I
[arXiv:2004.11871 \(2020\)](#)
2. C. Danieli, A. Andreanov, T. Mithun, and S. Flach
Caging of short-range interactions in all bands flat lattices: Part II
[arXiv:2004.11880 \(2020\)](#)
3. T. Mithun, C Danieli, M.V. Fistul, B.L. Altshuler, and S.Flach
Fragile many body ergodicity
[arXiv:2006.07179 \(2020\)](#)

In preparation:

1. C. Danieli, and A. Andreanov
Compact breather generator in one-dimensional nonlinear networks

Unpublished:

1. S. Flach, and C. Danieli
Comment on "Metal-insulator transition in an aperiodic ladder network: an exact result" [arXiv:1402.2742 \(2014\)](#)

Miscellaneous:

1. C. Danieli, T. Mithun, Y. Kati, and S. Flach
[Freezing upon heating: the formation of dynamics glass](#)
Press release for "Phys. Rev. Lett. 122 054102 (2019)"

2. E. Hook, with the contribution of C. Danieli, and S. Flach
[Breaking laws, making glass](#)
 Physics buzz issue for "Phys. Rev. Lett. 120, 184101 (2018)"
3. C. Danieli, L. Diamante, and S. Flach
[Breaking laws, making glass](#)
 Press release for "Phys. Rev. Lett. 120, 184101 (2018)"

Selected contributions at international scientific events:

1. Center for Theoretical Physics of Complex Systems (2020) - PCS-IBS, Daejeon, South Korea (seminar);
 Talk title: Caging of short-range interactions in all bands flat lattices.
2. American physical society March meetings (2019) - Boston, USA (invited talk);
 Talk title: The subtle road to equipartition - or not?.
3. International workshop on ergodicity breaking in many body systems (2018) - IIP Natal, Brazil (talk);
 Talk title: From intermittent to glassy dynamics in weakly non-integrable hamiltonian systems.
4. International workshop on disordered systems: from localization to thermalization and topology (2018) - PCS- IBS, Daejeon, South Korea (invited talk);
 Talk title: Dynamical glass.
5. Scientific gathering: Boris Chirikov, a pioneer of dynamical chaos (2018) - CIC Cuernavaca, Mexico (two talks); Talk 1 title: Compact discrete breathers in flat band networks;
 Talk 2 title: Intermittent equilibrium dynamics in many-body systems.
6. International Symposium on Intrinsic Localized Modes: 30th Anniversary of Discovery (2018) - Kyoto, Japan (talk);
 Talk title: Nonlinear compact periodic solutions in flat band networks.
7. International workshop on discrete, nonlinear and disordered optics (2017) - MPI-PKS Dresden, Germany (contributed talk and poster);
 Talk title: Quasiperiodic driving of Anderson localized waves in one dimension;

Poster title: flat band engineering of mobility edges.

Data	15/09/2020	Luogo	Dresda
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