

UNIVERSITÀ DEGLI STUDI DI MILANO

Procedura di selezione per la chiamata a professore di II fascia da ricoprire ai sensi dell'art. 18, commi 1 e 4, della Legge n. 240/2010 per il settore concorsuale FIS02/A2 , (settore scientifico-disciplinare FIS02) presso il Dipartimento di Fisica di Milano, (avviso bando pubblicato sulla G.U. n. 68 del 01/09/2020) - Codice concorso 4415

JACOPO VITI

CURRICULUM VITAE

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

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Short Bio

I am a theoretical physicist specialized in Statistical Field Theory. I earned my Ph.D. from the International Institute of Advanced Studies (SISSA) of Trieste in Italy in 2012, where I worked on Quantum Field Theories applied to Statistical Mechanics. In the years 2012-2014, I was employed as a post-doctoral researcher by the Laboratoire de Physique Theorique (LPT) de l'Ecole Normale Supérieure in Paris. Finally, in 2014-2016, I completed a second post-doc at the Max Planck Institute for the Physics of Complex Systems (MPIPKS) in Dresden, working on out-of-equilibrium quantum systems. Since February 2016, I am an Assistant Professor at the Federal University of Rio Grande do Norte (UFRN) in Natal (Brazil). From August 2017, I am also a Research Leader in Statistical Physics at the International Institute of Physics (IIP) of Natal (Brazil). In 2020, I spent a sabbatical leave at the Italian National Institute for Nuclear Physics (INFN) in Florence .

Academic Positions

International Institute of Physics: Natal, Rio Grande do Norte, Brazil
2017 to present | Research Leader in Statistical Physics

Universidade Federal do Rio Grande do Norte: Natal, RN, Brazil
2016 to present | Assistant Professor of Mathematics (*currently on leave*)

Max-Planck-Institut für Physik komplexer Systeme: Dresden, Sachsen, Germany
2014 to 2016 | Postdoc

Laboratoire de physique théorique de l'ENS (LPT-ENS): Paris, Île-de-France, France
2012 to 2014 | Postdoc

Education and qualifications

Scuola Internazionale Superiore di Studi Avanzati (SISSA): Trieste, Friuli-Venezia Giulia, IT
2008 to 2012 | PhD (Statistical Physics)

University of Florence: Florence, Toscana, IT
2002 to 2008 | Master in Physics

Invited positions and distinctions

INFN Sezione di Firenze: Sesto Fiorentino, IT
2020 to 2022 | Researcher

Additional Information

Italian Habilitations (ASN): Associate professor FIS02/A2, Associate professor FIS02/B2

Referee for JHEP, JSTAT, JphysA, PRA, PRB, PRL, PRR, SciPost

Married with one son

Research Activity (keywords)

Statistical Mechanics and Critical Phenomena, Conformal Field Theory, Quantum Dynamics and Entanglement, Lattice Models

Teaching and supervising activity

Undergraduate level: From February 2016, I am teaching the semestral courses (one per semester) Vetores e Geometria Analítica (Vectors and Analytic Geometry) and Álgebra Linear (Linear Algebra), for 1st and 2nd year undergraduates respectively. The total number of teaching hours per year is 120h/semester, including exams. The total amount of students attending each course is around 200 for each semester. The courses are mandatory for first and second year students at the School of Science and Technology of UFRN.

Graduate level: – July 2019-December 2019: I taught the graduate course (60h/semester) Teoria dos grupos e álgebras de Lie (Group Theory and Lie Algebras) for graduate students at the Physics department of the UFRN. The course introduces elementary notions of Lie Algebras and Lie Groups.

– February 2019-June 2019: I taught the graduate course (60h/semester) Teoria dos campos I (Quantum Field Theory I) for graduate students at the Physics department of the UFRN. The course introduces the basic computational tools of Quantum Field Theory.

– February 2018-June 2018: I taught the graduate course (60h/semester) Teoria dos campos II (Quantum Field Theory II) for graduate students at the Physics department of the UFRN. The course introduces the concepts of scaling and renormalization.

– February 2017: Topic course on 'Some aspects of quantum transport', three invited lectures (10h) at the PhD School "Statistical Field Theory Lectures" (GGI, Florence)

Master students – Bruno Henrique Nogueira; 'Conectividades no Modelo de Potts Crítico Bidimensional' (March 2020)

Projects for Postdocs – Dr. Ivar Lyberg, 2016-2018 (two papers); 'Monte Carlo study of vertex models'. Now working for Nordic Investment Bank (Tallin, Estonia).

– Dr. Máté Lencses, 2018-2020 (three papers); 'Entanglement in 1+1 QFTs and Truncated Conformal Space Approach'. Now at Budapest University.

– Dr. Filiberto Ares, 2018-present (two papers); 'Painlevé equations and Toeplitz determinant'

Organization activity

– March 2021: Organizer together with P. Calabrese (SISSA, Italy), O. Castro-Alvaredo (City London, UK), M. Rajabpour (UFF, Brazil) and S. Ryu (Chicago, USA) of the conference 'Entanglement measures in many-body systems', two weeks, approx. 60 participants. The conference is hosted by the IIP.

– From February 2020: Organizer together with P. Calabrese (SISSA, Italy), A. Cappelli (INFN Florence, Italy), J. Dubail (CNRS, France), F. Essler (Oxford, UK), C. Morais-Smith (Utrecht, Netherlands) and A. Trombettoni (Trieste, Italy) of the 'Statistical Field Theory School' at GGI (Florence, Italy)

– May 2019: Organizer together with B. Doyon (Kings College, UK), J. Dubail (CNRS, France), G. Mussardo (SISSA, Italy), M. Rajabpour (UFF, Brazil) of the conference 'Emergent hydrodynamics in low-dimensional systems', three weeks, approx. 60 participants. The conference is hosted by the IIP.

– I also contributed in the local organization and secured financial support through the CAPES agency (<http://www.capes.gov.br/index.php>) for the following programs held at IIP: 'New Trends in Integrable models' (Aug 2016-Nov 2016), 'Finite Systems in Nonequilibrium: From Quantum Quenches to the Formation of Strong Correlations' (Sep 2017), 'Number theory and physics' (Jun 2020).

Talks in international conferences

Oct 2019: 'Emptiness formation probability and the Painlevé V equation in the Ising spin chain', invited talk presented during the conference 'The beauty of theoretical physics, celebrating 60 years of Giuseppe Mussardo', ICTP, Trieste, Italy.

Jul 2019: 'Logarithmic correlations in statistical mechanics', invited talk presented during the program 'Random Geometry and Multifractality in Condensed Matter and Statistical Mechanics', IIP, Natal, Brazil.

Oct 2018: 'Exact logarithmic correlations in critical percolation', invited talk presented during the program 'Exactly Solvable Model', Simon Center for Geometry and Physics, Stony Brook University, USA.

Jun 2018: 'Exact logarithmic correlations in critical percolation', invited talk presented during the program 'Entanglement in Quantum Systems', GGI, Florence, Italy.

Jun 2018: 'Exact logarithmic correlations in critical percolation', invited talk presented at the Workshop 'Quantum spin chains and integrable models', IIP, Natal, Brazil.

Sep 2017 : 'Analytic solution of the Domain Wall Initial State', invited talk presented at the Workshop 'Finite Systems in Nonequilibrium: From Quantum Quenches to the Formation of Strong Correlations', IIP, Natal, Brazil.

Aug 2017 : 'Analytic solution of the Domain Wall Initial State', contributed talk presented at the Workshop 'Quantum Devices', IIP, Natal, Brazil.

Aug 2016: 'Arctic curves in fermionic systems', invited talk presented at the Workshop 'Boundary degrees of freedom and thermodynamic of integrable models', IIP, Natal, Brazil.

Jul 2016: 'Quantum dynamics after connecting two integrable spin chains', invited talk presented at the Workshop 'Quantum Systems out-of-equilibrium', IIP, Natal, Brazil.

Apr 2016: 'Arctic curves in fermionic systems', invited talk presented at the Workshop 'Statistical Mechanics and Combinatorics', Simon Center for Geometry and Physics, Stony Brook, USA.

Jan 2016: 'Inhomogeneous quenches and arctic curves in fermionic systems', contributed talk presented at the Workshop 'Mathematical aspects of quantum systems out-of-equilibrium', Isaac Newton Institute for Mathematics, Cambridge, UK.

Nov 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', invited talk presented at the Workshop 'Quantum many-body systems out-of-equilibrium', Bad-Honnef, Germany.

Aug 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', invited talk presented at the Workshop 'Strongly Coupled Field Theory for Condensed Matter', IIP, Natal, Brazil.

Apr 2015: 'Non-equilibrium CFT (with impurities)', invited talk presented at the Workshop 'Statistical physics and low-dimensional systems', Pont-à-Mousson, France.

Mar 2014: 'Imaginary Liouville Theory and applications', contributed talk presented at the Workshop 'Quantum Integrability, CFT and Topological Quantum Computation', IIP, Natal, Brazil.

Apr 2013: 'The three-point connectivity in the Q-color Potts model', invited talk presented at the Workshop 'Conformal Invariance in Continuous and Discrete Systems', Simon Center for Geometry and Physics, Stony Brook, USA.

Mar 2013: 'Non-equilibrium thermal transport in the Quantum Ising chain', contributed talk presented at the Workshop 'MECO, 38-th European Conference for the Middle European Cooperation in Statistical Physics', ICTP, Trieste, Italy.

Apr 2012: 'Field Theory approach to percolation and the Potts model', contributed talk presented at the Workshop '2012 British Mathematical Colloquium', Kent University, UK.

Sep 2012: 'Universal properties of two-dimensional percolation', contributed talk presented at the conference '8th Bologna workshop on CFT and Integrable models', Bologna, Italy.

Invited Seminar

Jul 2020 : 'Entanglement oscillations near a Quantum Critical Point', online seminar at International Institute of Physics, Natal, Brazil.

Jan 2020: 'Emptiness formation probability and the Painlevé V equation in the Ising spin chain', seminar at Racah Institute for Theoretical Physics, Jerusalem, Israel.

Jun 2018: 'Exact logarithmic correlations in critical percolation', seminar at Oxford Physics Department, Oxford, UK.

Jan 2018: 'Logarithmic correlations in the Ising model', seminar at Florence University, Florence, Italy.

Dec 2017: 'Analytic solution of the Domain Wall initial state', seminar at UFF, Niteroi, RJ, Brazil.

Sep 2017: 'Logarithmic correlations in the Ising model', seminar at ICTP-SAIFR, São Paulo, Brazil.

Jul 2017: 'Logarithmic correlations in the Ising model', seminar at Lorraine University, Nancy, France.

Feb 2017: 'Quantum Quenches near a quantum critical point', seminar at SISSA, Trieste, Italy.

Feb 2017: 'Arctic curves in fermionic systems', seminar at Florence University, Florence, Italy.

Apr 2016: 'Dimers on the honeycomb lattice', seminar at Simon Center for Geometry and Physics, Stony Brook, USA.

Aug 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', seminar at UFRN, Natal, Brazil.

Nov 2014: 'Non-equilibrium steady states in quantum spin chains', seminar at TUD, Dresden, Germany.

May 2014 'Non-equilibrium steady states in quantum spin chains', seminar at Pisa University, Pisa, Italy.

Apr 2014 'Non-equilibrium steady states in quantum spin chains', seminar at MPIPKS, Dresden, Germany.

Sep 2012 'A Field Theory approach to percolation and phase separation in two dimensions', seminar at LPTMS, Orsay, France.

Jun 2012 'Universal properties of two-dimensional percolation', seminar at LPT-ENS, Paris, France.

List of Publications

(P1) F. Ares, M. Rajabpour and J. Viti, Scaling of the Formation Probabilities and Universal Boundary Entropies in the Quantum XY Spin Chain, *J. Stat. Mech.* (2020) 083111.

(P2) O. Castro-Alvaredo, M. Lencsés, I. Szécsényi and J. Viti, Entanglement oscillations near a Quantum Critical Point, *Phys. Rev. Lett.* 124, 230601 (2020).

(P3) F. Ares and J. Viti, Emptiness formation probability and Painlevé V equation in the XY spin chain, *J. Stat. Mech.* 1 013105 (2020).

(P4) O. Castro-Alvaredo, M. Lencses, I. Szecsenyi and J. Viti, Entanglement dynamics after a quench in Ising field theory: A branch point twist-field approach, *JHEP* 12, 79 (2019).

(P5) K. Najafi, M. Rajabpour and J. Viti, Return amplitude after a quantum quench in the XY chain, *J. Stat. Mech.* 083102 (2019).

(P6) M. Lencses, J. Viti and G. Takacs, Chiral entanglement in massive quantum field theories in 1+1 dimensions, *JHEP* 1 (2019), 177.

(P7) G. Gori and J. Viti, Four-point boundary connectivities in critical two-

dimensional percolation from conformal invariance, JHEP 12 131 (2018).

(P8) A. Colcelli, J. Viti, G. Mussardo and A. Trombettoni, Universal off-diagonal long-range order for a trapped Tonks-Girardeau gas, Phys. Rev. A 98, 063633 (2018).

(P9) L. Mazza, J. Viti, M. Carrega, D. Rossini and A. De Luca, Energy transport in an integrable parafermionic chain via generalized hydrodynamics, Phys. Rev. B 98 075421 (2018).

(P10) I. Lyberg, V. Korepin, G. A. P. Ribeiro and J. Viti, Phase separation in the six-vertex model with a variety of boundary conditions, Journal of Mathematical Physics 59, 053301 (2018) [Invited contribution to Journal of Mathematical Physics special issue “To the memory of Ludwig Fad-deev”].]

(P11) K. Najafi, M. A. Rajabpour and J. Viti, Light-cone velocities after a global quench in a non-interacting model, Phys. Rev. B 97, 205103 (2018).

(P12) M. Collura, A. De Luca and J. Viti, Analytic solution of the domain wall initial state, Phys. Rev. B 97, 081111 (2018).

(P13) G. Gori and J. Viti, Exact logarithmic four-point functions in the critical Ising model, Phys. Rev. Lett. 119, 191601 (2017).

(P14) I. Lyberg, V. Korepin and J. Viti, The density profile of the six vertex model with domain wall boundary conditions, J. Stat. Mech. (2017) 053103.

(P15) G. Mussardo, G. Giudici and J. Viti (with an appendix by D. Zagier), The Coprime quantum chain, J. Stat. Mech. (2017) 033104.

(P16) J. Dubail, J-M. Stéphan, J. Viti and P. Calabrese, Conformal Field Theory for Inhomogeneous One-dimensional Quantum Systems: the Example of Non-Interacting Fermi Gases, Sci. Post 002 (2017).

(P17) G. Delfino and J. Viti, On the theory of quantum quenches in near-critical systems, J. Phys. A: Math. Theor. 50 (2017) 084004 [Invited contribution to the special issue of J. Phys. A: “John Cardy’s scale-invariant journey in low dimensions: a special issue for his 70th birthday”].

(P18) J. Viti, J-M. Stéphan, J. Dubail and M. Haque, Inhomogeneous quenches in a fermionic chain: exact results, EPL 115 (2016) 40011

(P19) A. Biella, A. De Luca, J. Viti, D. Rossini, L. Mazza and R. Fazio, Energy transport between two integrable spin chains, Phys. Rev. B 93, 205121 (2016).

(P20) N. Allegra, J. Dubail, J.M. Stephan and J. Viti, Inhomogeneous field theory inside the arctic circle , J. Stat. Mech. (2016) 053108.

(P21) A. De Luca, G. Martelloni and J. Viti Stationary states in a free fermionic chain from the Quench Action Method, Phys. Rev. A (Rapid) 021603 (2015).

(P22) D. Bernard, B. Doyon and J. Viti, Non-Equilibrium Conformal Field The-

ory with Impurities, J. Phys. A 48 (2015) 05FT01 [Highlights 2015].

(P23) A. De Luca, J. Viti, L. Mazza and D. Rossini, Energy transport in Heisenberg chains beyond the Luttinger Liquid paradigm, Phys. Rev. B (Rapid) 90, 161101 (2014).

(P24) R. Santachiara and J. Viti, Local logarithmic correlators as limits of Coulomb gas integrals, Nucl. Phys. B 882C (2014).

(P25) G. Delfino, M. Picco, R. Santachiara and J. Viti, Spin clusters and conformal field theory, J. Stat. Mech. (2013) P11011.

(P26) A. De Luca, J. Viti, D. Bernard and B. Doyon, Non-equilibrium thermal transport in the quantum Ising chain, Phys. Rev. B 88 134301 (2013).

(P27) M. Picco, R. Santachiara, J. Viti and G. Delfino, Connectivity of Potts FK clusters and time-like Liouville correlators, Nucl. Phys. B 875 (2013), 719-737.

(P28) G. Delfino and J. Viti, Phase separation and interface structure in two dimensions from field theory, J. Stat. Mech. (2012) P10009

(P29) G. Delfino and J. Viti, Crossing probability and number of crossing clusters in off-critical percolation, J. Phys. A: Math. Theor. 45 032005 (2012) [Highlights 2012].

(P30) G. Delfino and J. Viti, Potts q-color field theory and the scaling random cluster model, Nucl. Phys. B852 149-173, (2011).

(P31) G. Delfino and J. Viti, On three-point connectivity in two-dimensional percolation, J.Phys. A: Math. Theor.44: 032001, (2011).

(P32) G. Delfino and J. Viti, Universal properties of Ising clusters and droplets near criticality, Nucl. Phys. B840: 513-533, (2010).

(P33) G. Delfino, J. Viti and J. Cardy, Universal amplitude ratios of two-dimensional percolation from field theory, J. Phys. A: Math. Theor.43: 152001, (2010) [Highlights 2010]

Data

03/09/2020

Luogo

Firenze