CURRICULUM VITAE

Philippe R. DI FRANCESCO

1-General information

Name: DI FRANCESCO   First: Philippe
Citizenship: French
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2-Education

1980: Bac série C mention TB (high school diploma, math major, highest honors).
1982: Admission to the national exam to the Ecole Polytechnique (section M'); rank: first.
1983: Licence ès Mathématiques, mention TB (highest honors), Université Paris XI-Orsay, passed during the military service.
1985: Diplôme d'ingénieur de l'Ecole polytechnique; rank: first.
1985: Admission to the Corps National des Mines. Present grade: ingénieur en chef, septième échelon.
1987: DEA (last diploma before PhD) in Solid state physics, director J. Friedel, Université Paris XI-Orsay; mention TB (highest honors).
1988: Diplôme d'ingénieur du Corps National des Mines.
1989: PhD of the Université Paris VI-Jussieu, adviser: J.-B. Zuber (SPhT, Saclay); mention très honorable (highest honors); subject: *Conformally invariant two-dimensional field theories.*
2004: Habilitation à diriger des recherches (HDR), Université Paris VII, spécialité Mathématiques.

3-Distinctions

1985: Prize L.E. Rivot of the French Académie des Sciences.
1985: Laplace Medal of the French Académie des Sciences.
1985: Prize H. Poincaré of the Alumni Association of the Ecole Polytechnique.

4-Funding

1996: Junior Faculty Development award, University of North Carolina at Chapel Hill. Research Small Grant, University of North Carolina at Chapel Hill.
1997: NSF Principal Investigator Grant (1/2 mathematics, 1/2 physics), 3 years.
2001-2004: Member of the European network grant EUROGRID.
2002-2005: Member of the European network grant EUCLID.
2004-2007: Member of the European network grant ENRAGE.
2004-2007: Member of the ACI grant "Masses de données", GEOCOMP project.
2006-2008: Member of the ANR grant GIMP.
2006-2010: Member of the European network grant ENIGMA.
2009-2012: Member of the ANR grant GranMa.

5-Employment/Visiting positions

1988-: Permanent research member, Institut de Physique Théorique, C.E.A., Saclay, France.
1989-1991: Research associate, Princeton University, Princeton, N.J., theoretical physics group (D. Gross).
1996-1998: Associate professor of mathematics, department of Mathematics, University of North Carolina at Chapel Hill, U.S.A.
1998-2000: Professor of Mathematics, department of Mathematics, University of North Carolina at Chapel Hill, U.S.A.
1999: Member, Mathematical Science Research Institute, Berkeley, U.S.A. (spring).
2008: Member, Mathematical Science Research Institute, Berkeley, U.S.A. (spring).
2009: Visiting Professor, University of Illinois at Urbana-Champaign, Urbana, U.S.A. (spring).
Research in Pairs, Mathematisches ForschungsInstitut Oberwolfach, Germany (summer).

Member, Institut Henri Poincaré, Paris (fall).

2010: Gehring Visiting Scholar, University of Michigan, Ann Arbor, U.S.A. (spring).
Research Professor, Mathematical Science Research Institute, Berkeley, U.S.A. (fall).

6-PhD supervision

1992-1995: PhD adviser of F. Lesage (co-direction with C. Itzykson).
1996-1998: PhD adviser of Karl Hallowell, mathematical physics.
2001-2005: PhD adviser of Jérémie Bouttier (co-direction with E. Guitter).

7-Conference organization

1994: Organization of the conference: *Topology, Strings and Integrable Models* (with D. Bernard, V. Pasquier of Saclay, J.-L. Gervais of the ENS, C. Bachas of the Ecole Polytechnique, and L. Baulieu of Paris 6-Jussieu), satellite of the XI-th International Congress of Mathematical Physics of the IAMP.
1997: Co-organization (with L. Baulieu, P. Windey and M. Picco) of the summer school: *Strings, Branes and Dualities*, Cargèse, France.
1998: Organization of a satellite conference to Stat Phys 98: *Journées Claude Itzykson*, Institut Henri Poincaré, Paris, France.
2000: Organization of the "journée thématique du Service de Physique Théorique: Physique Statistique Combinatoire", SPhT, Saclay, France.
2001: Co-organization (with I. Kostov) of the 6th international Claude Itzykson meeting "MATRIX MODELS 2001", SPhT Saclay, France.
2002: Co-organization (with W. Krauth) of the session "Statistical Mechanics" of the internationnal conference TH-2002, Palais de l'UNESCO, Paris, France.
2004: Co-organization (with F. David and B. Eynard) of the Les Houches 2004 EUROGRID conference, Ecole de Physique des Houches, France.
2007: Co-organization (with C. Krattenthaler) of the Oberwolfach seminar: enumerative combinatorics and statistical physics, November 2007, Mathematisches ForschungsInstitut Oberwolfach, Oberwolfach, Germany.
2008: Co-organization (with B. Duplantier) of the workshop "Statistical Mechanics and Quantum Field Theory methods in Combinatorial Enumeration", Isaac Newton Institute for Mathematical Sciences, 21-25 April 2008, Cambridge, UK.

8-Conferences, Courses, Seminars

A-Invited conference talks

1987: −*Two-dimensional critical models on a torus*, Summer School *Conformal Invariance and String Theory*, Poiana-Brasov, Romania.
1988: −*Structure constants in Rational Conformal Field Theory*, Summer School *Fields, strings and critical phenomena*, Les Houches, France.
1989: −*Integrable lattice models, graphs and conformal field theory*, conference *Operator algebras and connections with conformal quantum field theory and statistical mechanics*, Penn State University, Pennsylvania, USA.
−*Integrable lattice models and graphs*, workshop of the Aspen Center for Physics, Aspen, CO.
1990: −*Correlation functions of minimal models coupled to 2D quantum gravity*, Summer School *Random surfaces, quantum gravity and strings*, Cargèse, France.
1992: −*Observables in the Kontsevich model*, conference *Low-dimensional topology and quantum field theory*, Isaac Newton Institute for Mathematical Sciences, Cambridge, U.K.
−2D quantum gravity, conference *Advanced quantum field theory: low dimensional field theories*, Centro A. Volta, Villa Olmo, Como, Italy.
−*Observables in the Kontsevich model*, rencontres entre mathématiciens et physiciens, 25$^{\text{ème}}$ RCP, Strasbourg, France.

1993: –*Topological field theory and matrix models*, conference *Advanced quantum field theory and critical phenomena: integrability, conformal invariance and topological fiel d theories*, Monte Verità, Ascona, Switzerland.

1994: –*Physique Bidimensionnelle et Théorie des Champs*, Journées Jeunes Chercheurs 93 de la S.F.P. (French Physical Society), Super–Besse, France.

–*Quantum intersection rings*, conference *Integrable systems from a quantum point of view*, Mathematisches Forschungsinstitut Oberwolfach, Germany.

1995: –*Enumerative Geometry from string theory*, conference *Physics and Combinatorics*, CIRM, Luminy, France.

–*Meanders*, Summer School *Low-dimensional applications of quantum field theory*, Cargèse, France.

–*Systèmes intégrables et théories topologiques*, colloquium *De 2 à 4 dimensions* of the General Congress of the French Physical Society (S.F.P.), Centre St-Charles, Marseille, France.

1996: –*Meanders*, conference *The Mathematical Beauty of Physics*, dedicated to the memory of Claude Itzykson, CEA Saclay, France.

1997: –*The meander determinant and its generalizations*, conference *The Calogero-Moser-Sutherland models*, Centre de Recherches Mathématiques, Montréal, Canada.

1998: –*Folding and Coloring Problems in Mathematics and Physics*, invited address at the 931st Meeting of the American Mathematical Society, Louisville, KY, USA.

–*Folding and Coloring Problems in Mathematics and Physics*, Workshop on quantum integrable systems, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.

–*Folding and Coloring Problems in Mathematics and Physics*, Conference on Vertex Operators and Representation theory, Department of Mathematics, NCSU, Raleigh, NC.

1999: –*Coloring Random Triangulations*, workshop on Random Matrices and Applications, MSRI, Berkeley, CA.

–*Matrix Model Combinatorics: Applications to Folding and Meanders I and II*, Trimestre *Probabilités Libres et Espaces d'Opérateurs*, Centre Emile Borel, Institut Henri Poincaré, Paris.

2000: –*Pliages et Méandres: Physique appliquée aux Mathématiques*, Mini-colloque du C.M.L.A. de l'E.N.S. de Cachan, Cachan, France.

–*Meanders: Exact Exponents*, 4th informal UK meeting on 2D integrable models and conformal field theory, ICMS, Edinburgh, U.K.

–*From Fully-Packed Loops to Meanders*, 66th meeting between theoretical physicists and mathematicians, RCP 25, IRMA, Strasbourg, France.

–*From Fully-Packed Loops to Meanders: exact asymptotics*, workshop "Integrable models in condensed matter and non-equilibrium physics", Centre de Recherche Mathematique, Université de Montréal, Montréal, Canada.

–*From Fully-Packed Loops to Meanders: exact exponents*, special session Mathematical Physics of the First AMS-Scandinavian International Mathematics meeting and XXIII Scandinavian Congress of Mathematicians, SDU Odense Universitet, Odense, Danemark.

–*From Fully-Packed Loops to Meanders: exact exponents*, conference TMR 2000, Institut Henri Poincaré, Paris.

–*From Fully-Packed Loops to Meanders: exact exponents*, Eurogrid conference "Discrete Random Geometry", Niels Bohr Institute, Copenhagen, Danemark.

2001: –*From Fully-Packed Loops to Meanders: exact exponents*, conference "Random Matrices", ForschungsInstitut für Mathematik, ETH, Zürich.

2002: –*Geometrically constrained statistical models on fixed and random lattices: from hard squares to meanders*, invited talk, 14th conference on Formal Power Series and Algebraic Combinatorics, the University of Melbourne, Melbourne, Australia.

–*Geometrically constrained statistical models on fixed and random lattices: from hard squares to meanders*, EUROGRID conference "Quantum Gravity and Random Geometry", Orthodox Academy of Crete, Kolympari, Crete.

–*Systèmes contraints sur réseaux aléatoires: objets durs et méandres*, Colloquium de mathématiques, Institut de mathématiques de Jussieu et universites Paris 6 – Paris 7, Paris.

2003: –*Geometrically constrained statistical models on fixed and random lattices: from hard squares to meanders*, conference "NUMBER THEORY AND COMBINATORICS IN PHYSICS", University of Florida, Gainesville, March 21-23, 2003.

–*Geodesic distance in planar graphs and solitons*, conference "Integrable Models and Applications: from Strings to Condensed Matter", Florence, Italy, September 15-19, 2003.

2004: –*Distance géodésique et surfaces aléatoires: une approche intégrable*, colloque "Problèmes combinatoires inspirés par la mécanique statistique", ACFAS 2004, Montreal, May 11-12, 2004.

–*Geodesic distance in planar graphs: exact results via solitons*, conference "Théories asymptotiques et équations de Painlevé", Université d'Angers, June 1-5, 2004.

–*Geodesic distance in planar graphs: solitons to the rescue!*, colloque international "Integrable systems" en l'honneur de Pierre van Moerbeke à l'occasion de son soixantième anniversaire, June 12-16 2004, Poitiers, France.

–*Combinatorial statistical physics: the miracles of integrability* (3 hrs), Séminaire Lotharingien de Combinatoire **53**, October 10-13 2004, Haus Schönenberg, Ellwangen, Germany.

2005: –*Integrability and combinatorics: loop models, alternating sign matrices and multidegree of algebraic varieties*, conference "Random matrices, random processes and integrable systems", June 20-July 8, 2005, Centre de Recherches Mathématiques, Université de Montréal.

–*Physics and combinatorics: the miracles of integrability*, opening colloquium for the Center for Mathematical Physics (ZMP), Oct. 20-22 2005, Hamburg University, Hamburg, Germany.

–*Physique et combinatoire: les miracles de l'intégrabilité*, journées AOC (Arbres et autres Objets Combinatoires), Nov.30- Dec.2 2005, LABRI, Université Bordeaux I, Bordeaux, France.

2006: –*Physics and combinatorics: the miracles of integrability*, ENRAGE network opening meeting, ICMS, Edinburgh, April 3-7 2006.

–*Physics and combinatorics: the miracles of integrability*, GIMP'06 meeting (Geometry and Integrability in Mathematical Physics), Independent University of Moscow, Moscow, Mai 15-19 2006.

–*Physics and combinatorics: the miracles of integrability*, conference "JB is 60", to honor Jean-Bernard Zuber on his 60th birthday, SPhT Saclay, France, June 1-2 2006.

–*Physics and combinatorics: the miracles of integrability*, meeting "Affine Hecke Algebras and Representations", Centre International de Rencontres Mathematiques, Luminy, France, June 20-23 2006.

–*Physics and combinatorics: the miracles of integrability*, conference "Themes in the interface of representation theory and physics", City University of London, London, December 11-15 2006.

–*The combinatorics behind matrix models and beyond*, 2nd Brunel workshop on Random Matrix Theory, Brunel University, Uxbridge, December 18-19 2006.

2007: –*Loop gas, alternating sign matrices, plane partitions and orbital varieties: proofs and conjectures*, conference "Combinatorial Problems Raised by Statistical Mechanics", Centre de Recherches Mathématiques, Université de Montréal, Montréal, Québec, Feb 19-23 2007.

–*Integrable combinatorics: from loop gas to orbital varieties via plane partitions*, conference "Random and integrable models in mathematics and physics", Royal Academy of Belgium, Brussels, Belgium, Sept. 11-15, 2007.

2008: –*The Razumov-Stroganov conjecture: loop gas, alternating sign matrices, plane partitions and orbital varieties*, conference "Topics in Combinatorial Representation Theory", Mathematical Science Research Institute, Berkeley, California, USA, March 17-21, 2008.

–*Integrable combinatorics: from qKZ to TSSCPP*, workshop "Combinatorics and statistical Physics", Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, May 18-31, 2008.

–*Q-systems, heaps, paths and the cluster positivity conjecture*, conference "Combinatorics and representation theory", Graduate school of mathematics, Nagoya University, Nagoya, Sept. 1-5, 2008.

–*Q-systems, heaps, paths and the cluster positivity conjecture*, conference GIMP'08, Centre International de Recherche Mathématique, Luminy, Sept. 15-19, 2008.

2009: –*Q-systems and cluster positivity*, special session "Algebra, Geometry and Combinatorics", 2009 Spring Sectional Meeting of the AMS, Urbana-Champaign, Illinois, March 27-29, 2009.

–*Q-systems and cluster positivity*, conference "Mathematics and Physics of Solitons and Integrable Systems - Conference in honor of Vladimir B. Matveev's 65th birthday", University of Bourgogne, Dijon, France, June 28-July 2, 2009.

2009: –*Discrete non-commutative integrability*, 2nd international conference in the memory of Alexei Zamolodchikov "Facets of Integrability", Institut de Physique Théorique, Saclay and Ecole Normale Supérieure, Paris, November 5-7, 2009.

2010: –*Combinatoire et Physique des systèmes intégrables*, Journée inaugurale de l'équipe "Combinatoire, algorithmique et interactions" (CALIN), LIPN, Université Paris 13, Viletaneuse, May 11, 2010.
–*Geodesic distance in planar maps: from matrix models to trees*, Workshop "Random Matrix Theory and Its Applications I", MSRI, Berkeley, Sept.13-17, 2010.

2011: –*Proof of the ASM-DPP conjecture*, Journées Combinatoires de Bordeaux (JCB2011), Labri, Université Bordeaux I, Bordeaux, Jan 23-27, 2011.

B-Courses

1989: –*Two-dimensional statistical models and CFT*, in the framework of the Summer Institute *Mathematics and conformal field theory*, Aspen, Colorado, USA.

1990: –*$d < 1$ strings from matrix models and KdV flows*, course delivered in the framework of the Summer Session *Conformal field theory and related topics*, ITP, Santa Barbara, USA.

1994: –*Introduction à la théorie des champs*, Département de Mathématiques, Bat 425, Université de Paris XI-Orsay, France.

1996: –*2D quantum and topological gravities, matrix models and integrable differential systems*, Cargese Summer School on *The Painlevé property, a century later*.
–*Math 33, Sects. 3 and 6: Calculus* (Fall 96), Undergraduate courses, UNC at Chapel Hill, Chapel Hill, N.C.

1997: –*Math 234: Quantum gravity, matrix models and combinatorics*, Topics graduate course (Spring 97),
–*Math 83, Sect. 2: Linear Algebra and Differential Equations* (Fall 97), Undergraduate course
–*Math 137, Sect. 1: Linear Algebra* (Fall 97), Undergraduate course UNC at Chapel Hill, Chapel Hill, N.C.

1998: –*Math 234: Solving Integrable Lattice Models*, Topics graduate course (spring 98)
–*Math 83A*: Honors course in Linear Algebra and Differential equations (Fall 98), Undergraduate course
–*Math 186*: Algebra (Fall 98), Graduate course preparing to the comprehensive exams, UNC at Chapel Hill, Chapel Hill, N.C.

1999: –*Mécanique statistique et gravitation bidimensionnelle* (spring 99), Topics graduate course, DEA de Mathématiques, Paris 7, Jussieu, France.

2000: –*Modèles de Matrices Intégrables* (spring 2000), Topics graduate course, DEA de Mathématiques, Paris 7, Jussieu, France.

2001: –*Modèles de Matrices Intégrables* (spring 2001), Topics graduate course, DEA de Mathématiques, Paris 7, Jussieu, France.
–*Folding, Coloring and Loop Models on fixed and Random Surfaces*, Advanced seminar on Field Theoretical Methods in Condensed Matter Physics (three lectures), San Feliu de Guixols, Spain.

2003: –*Matrix Models and Combinatorics*, (20 hrs), semester "Geometry and Statistics of Random Growth", Jan-Apr 2003, Institut Henri Poincaré, Paris.

2004: –*Matrix Models, 2D quantum gravity and graph combinatorics*, (9 hrs), summer school "Applications of random matrices in Physics", June 6-25 2004, Ecole de physique des Houches, Les Houches, France.

2007: –*Integrable Combinatorics*, (4.5 hrs), conference "Combinatorics and Physics", Max Planck Institute for Mathematics, Bonn, Germany, March 19-23 2007.
–*Integrable Combinatorics: from loop gas to orbital varieties and beyond*, (3 hrs), summer school "Random trees 2007", University of Reykjavik, Reykjavik, Iceland, August 20-23 2007.
–*Combinatorics*, (3hrs), European network ENIGMA School "Quantum Integrability", La Londe les Maures, France, 14-19 October 2007.
–*Integrable Combinatorics*, (15hrs), Oberwolfach Seminar "Enumerative Combinatorics and Integrable Models of Statistical Mechanics", Mathematisches Forschungsinstitut Oberwolfach, November 18-24 2007.

2008: –*Integrable Models of Statistical Physics and Enumerative Combinatorics*, (13 hrs), Summer School on "Combinatorics and Statistical Mechanics", Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, July 7-11 2008.

2009: –*Integrable Combinatorics*, (45 hrs), Math 595, Graduate Topics course, departments of Mathematics and Physics, University of Illinois at Urbana-Champaign, spring 2009.

–*Integrable Combinatorics*, (16 hrs), extended course, semester "Statistical physics, combinatorics and probability: form discrete to continuous models", Institut Henri Poincaré, Paris, fall 2009.

2010: –*Master Class: Cluster Algebras* (4 hrs), Center for Quantum Geometry of Moduli Spaces, Aarhus University, Denmark, June 2010.

–*Integrable Combinatorics*, (6 hrs), mini-course, Clay Mathematics Institute 2010 Summer School "Probability and Statistical Physics in Two and more Dimensions", Buzios, Brazil, July 2010.

C-Other invited lectures

1988: –*Corrélations du modèle d'Ising sur le tore*, SPhT, Saclay, France.

–*Structure constants of Rational Conformal Field Theories*, department of physics, University of California, Davis, California, USA.

1989: –*Integrable lattice models, graphs and CFT's*, Physics department, Princeton University, USA.

–*Integrable lattice models, graphs and CFT's*, Physics department, University of Chicago, Chicago, USA.

–*Integrable lattice models, graphs and CFT's*, Physics department, University of Pennsylvania, Philadelphia, USA.

1990: –*Unitary minimal models coupled to 2D quantum gravity*, Physics department, Princeton University, USA.

–*Unitary minimal (super)conformal models coupled to non-perturbative 2D quantum (super)gravity*, Physics department, Harvard University, Cambridge, USA.

–*Conformal matter coupled to gravity from Korteveg-de Vries flows*, Dipartimento di Fisica, Università di Firenze, Italy.

–*Conformal matter coupled to gravity from Korteveg-de Vries flows*, INFN, Pisa, Italy.

–*Minimal models coupled to 2D quantum gravity*, Universität Bonn, Bonn, Germany.

–*Superconformal minimal models coupled to 2D supergravity*, Universität Bonn, Bonn, Germany.

1991: –*Classical W-algebras*, Physics department, Princeton University, USA.

–*Classical W-algebra and Singular vectors of the Virasoro algebra*, Yale University, Mathematics department, New-Haven, Connecticut, USA.

–*Vecteurs singuliers de l'algèbre de Virasoro*, Université Laval, département de Physique, Québec, Canada.

–*Two-dimensional quantum gravity and integrable systems*, colloquium du département de physique de l'université Mc-Gill, Montréal, Canada.

1992: –*L'équation de Korteveg-de Vries quantique*, SPhT, Saclay, France.

–*Correlation functions in 2D quantum gravity*, LPTHE, Université Paris VI-Jussieu, France.

1993: –*Anneaux de fusion en théorie des champs*, Institut de Physique Nucléaire, Université d' Orsay-Paris XI, France.

–*Fusion rings and topological field theory*, Physics department, University of Tel-Aviv, Tel-Aviv, Israel.

–*Integrable lattice models and graphs*, Physics department, University of Tel-Aviv, Tel-Aviv, Israel.

–*Fusion rings and topological field theory*, Physics department, University of Jerusalem, Jerusalem, Israel.

–*Théories des champs N=2 superconformes à la Landau-Ginzburg*, SPhT, Saclay, France.

1994: –*Pliage du réseau triangulaire*, SPhT, Saclay, France.

–*Gravitation quantique et systèmes différentiels intégrables*, C.M.L.A., E.N.S. Cachan, Cachan, France.

1995: –*Méandres*, SPhT, Saclay, France.

–*Géométrie énumérative et gravitation quantique*, colloquium de l'Institut Fourier, UFR de Mathématiques, Université de Grenoble, France.

1996: –*Invariance conforme, ou le triomphe de la symétrie*, colloquium du DRFMC, CENG, Grenoble.

–*Meanders*, I.N.F.N., sezione Firenze, Italy.

–*Meanders*, Mathematics, UNC Chapel Hill, Chapel Hill, NC.

–*Enumerative geometry from string theory*, Mathematics, UNC Chapel Hill, Chapel Hill, NC.

1997: –*SU(N) Meander Determinants*, Service de Physique Théorique, CEA Saclay, France.

–*SU(N) Hecke Determinants*, I.N.F.N., sez. Firenze, Florence, Italy.

–Meander Determinants, Mathematics, NCSU, Raleigh, NC.

–Folding and Coloring Problems in Mathematics and Physics,"Visions Seminar", UNC Chapel Hill, Mathematics.

–Coloring Random Triangulations, Enrico Fermi Institute, Chicago, IL, Physics.

1998: *–New Integrable Models from Fuss-Catalan Algebras*, Institut d'été en Physique Théorique de l'Ecole Normale Sup'erieure, LPTENS, Paris, France.

–Folding and Coloring Problems in Mathematics and Physics, Geometry seminar, Mathematics, Boston University, Boston, MA.

–Folding and Coloring Problems in Mathematics and Physics, Colloquium of the Department of Applied Mathematics, M.I.T., Boston, MA.

–Folding and Coloring Problems in Mathematics and Physics, Colloquium of the Department of Mathematics, George Washington University, Washington, DC.

–Meanders, Topology and Combinatorics seminar, Department of Mathematics, George Washington University, Washington, DC.

1999: *–Meanders I* and *Meanders II*, MSRI seminar, MSRI, Berkeley, CA.

–Matrix Model Combinatorics: Applications to Folding and Meanders I and II, Semestre "Probabilités Libres et Espaces d'Operateurs", Centre E. Borel, Institut H. Poincaré, Paris.

2000: *–Gravité Lorentzienne à 1+1D, intégrabilité et l'Hamiltonien de Calogero*, séminaire du Service de Physique Théorique, SPHT, Saclay, France.

–Pliages, Coloriages et Gaz de boucles à deux dimensions, séminaire du LPTMS, Orsay, France.

–Pliages, Coloriages et Gaz de boucles à deux dimensions, journée thématique "Physique statistique Combinatoire", SPHT, Saclay, France.

2003: *–Systèmes contraints sur réseaux fixes et aléatoires: objets durs et méandres*, colloquium de mathématique, Institut de mathématiques de Jussieu et Universités Paris 6 - Paris 7.

–Distance géodésique et réseaux aléatoires: une approche intégrable, Bi-séminaire de l'Institut Henri Poincaré, Paris.

2004: *–Proof of the Razumov-Stroganov sum rule*, séminaire de Physique Mathématique, SPhT, Saclay.

2006: *–Des matrices à signe alternant aux variétés orbitales : l'intégrabilité au travail*, INRIA Rocquencourt, January 2006.

–Physics and combinatorics: the miracles of integrability, colloquium, University of Reykjavik, June 2006.

2007: *–Integrable combinatorics*, CRM–ISM colloquium of mathematics, common to Université de Montréal and Université du Québec à Montréal, Montréal, Québec, February 2007.

–Integrable combinatorics, BCDE Seminar, dept of mathematics, University of Illinois at Urbana-Champaign, April 2007.

2008: *–Q-systems, heaps, paths and the cluster positivity conjecture*, Algebra, Geometry and Combinatorics Seminar, dept of mathematics, University of Illinois at Urbana-Champaign, October 2008.

–Q-systèmes, empilements, chemins, et la positivité des algèbres de cluster, colloque de l'IPhT, Batz-sur-Mer, October 2008.

2009: *–Q-systèmes, empilements, chemins, et la positivité des algèbres de cluster*, séminaire d'algèbre, département de Mathématiques, Univ. Lyon I, January 2009.

–Q-systems, heaps, paths and the cluster positivity conjecture, Combinatorics seminar, M.I.T, Boston, February 2009.

–Q-systems and cluster positivity, Combinatorics seminar, University of Michigan, Ann-Arbor, Michigan, April 2009.

–Integrable Combinatorics, Colloquium of the Department of Mathematics, University of Illinois, Urbana-Champaign, Illinois, April 2009.

–Q-systems and cluster positivity, Representation Theory, Geometry and Combinatorics seminar, University of California, Berkeley, California, April 2009.

–Integrable Combinatorics, Colloquium of the Department of Mathematics, University of Geneva, Switzerland, November 2009.

–Towards non-commutative cluster algebras, Séminaire d'algèbre de l'institut Mathématique de Jussieu, November 2009.

2010: *–Introduction to Integrable Lattice Models*, Applied Interdisciplinary Mathematics Seminar, Department of Mathematics, University of Michigan, Ann Arbor, February 2010.

–Integrable Combinatorics, Applied Interdisciplinary Mathematics Seminar, Department of Mathematics, University of Michigan, Ann Arbor, February 2010.

–Discrete non-commutative integrable systems and positivity: proof of a conjecture by M. Kontsevich, Algebra, Geometry and Combinatorics Seminar, Department of Mathematics, University of Illinois Urbana-Champaign, Urbana, March 2010.

–Q- and T-systems, paths, and cluster positivity II, Combinatorics Seminar, Department of Mathematics, University of Michigan, Ann Arbor, March 2010.

–Cluster Positivity for Discrete Integrable Systems and Non-commutative Generalizations, Representation Theory seminar, Department of Mathematics, University of California Berkeley, Berkeley, October 2010.

–The Proof of the ASM-DPP Conjecture, Mathematical Physics seminar, Department of Mathematics, University of California Davis, Davis, November 2010.

–The Proof of the ASM-DPP Conjecture, Dimer seminar, Department of Mathematics, University of California Berkeley, Berkeley, November 2010.

2011: *–The Proof of the ASM-DPP Conjecture*, Algebra, Geometry and Combinatorics Seminar, Department of Mathematics, University of Illinois Urbana-Champaign, Urbana, February 2011.

9-Publications

[1] *Supersymétrie et Structure Riemannienne sur les Variétés*, P. Di Francesco et P. Perrodo, Rapport Interne de l'Ecole Polytechnique (1985).

[2] *Modular invariance in non-minimal 2-dimensional conformal theories*, P. Di Francesco, H. Saleur and J.-B. Zuber, Nucl. Phys. **B285** (1987) 454.

[3] *Relations between the Coulomb Gas picture and conformal invariance of two dimensional critical models*, P. Di Francesco, H. Saleur and J.-B. Zuber, J. Stat. Phys. **49**, Vol 1/2 (1987) 57.

[4] *Critical Ising correlation functions in the plane and on a torus*, P. Di Francesco, H. Saleur and J.-B. Zuber, Nucl. Phys. **B290[FS20]** (1987) 527.

[5] *Two dimensional critical models on a torus*, H. Saleur and P. Di Francesco, in *Conformal invariance and string theory*, P. Dita and V.Georgescu eds., Perspectives in Physics, Academic Press (1989).

[6] *Correlation functions of the critical Ising model on a torus*, P. Di Francesco, H. Saleur and J.-B. Zuber, Europhysics Letters, **5**(2) (1988) 95.

[7] *Generalized Coulomb gas formalism for two dimensional critical models based on SU(2) coset construction*, P. Di Francesco, H. Saleur and J.-B. Zuber, Nucl. Phys. **B300[FS22]** (1988) 393.

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