

Curriculum Vitae

Dimitri Vey
Research & Teaching¹

Name | DIMITRI VEY
Birth | June 24, 1983, Paris 75011, France
Degrees | Ph.D. – Habilitation MCF (25 & 29)
Citizenship | French
Languages | French (Mother Tongue), English (Fluent), Spanish & Italian (Basic), C/C++, PHP, HTML, CSS, SQL (Basic) – L^AT_EX (Fluent)

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ARXIV — ORCID — HAL — RG — SCHOLAR

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¹update : May 1, 2018

1 Academic Degrees

1.1 Degrees

9/09	PH.D. Mathematical–Physics ²
11/12	Very honourable Distinction, Paris 7–Paris Diderot University Paris, France TITLE: Multisymplectic Gravity, HAL : https://hal.archives-ouvertes.fr/tel-01242623v1
9/06	MASTER Fundamental Physics
6/09	(Physique Fondamentale et Sciences pour l’Ingénieur), Paris 7–Paris Diderot University Orsay, France M2 : NPAC (Noyaux, Particules, Astroparticules, Cosmologie) M1 : Magistère de Physique Fondamentale.
6/05	LICENCE Fundamental Physics
9/02	Blaise Pascal University, Clermont 2 Clermont–Ferrand, France L3 : Licence de Physique Fondamentale L2 : DEUG Sciences de la Matière, Physique–Chimie.

1.2 Habilitations

2/16	MCF – Maître de Conférence
2/20	Section 25 – Mathematics Nu : 16225247600
1/16	MCF – Maître de Conférence
1/20	Section 29 – Fundamental Physics (Constituants Élémentaires) Nu: 16229247600

2 Work Experiences

2.1 Teaching

9/17	ASSISTANT PROFESSOR Professor of Physics
4/18	Department of Physics and Engineering Sciences, EISTI – École Internationale des Sciences et Techniques de l’Information Pau, France
11/13	LECTURER Doctoral School
2/14	SPHERE Laboratory, UMR 7219, Paris 7–Paris Diderot University, ERC Philosophy of Canonical Quantum Gravity Paris, France
9/10	LECTURER Monitorat
9/12	Department of Physics, Paris 7–Paris Diderot University Paris, France

²TOPICS : Mathematical–Physics, Differential Geometry, General Relativity. | JURY :
JEREMY BUTTERFIELD – Trinity College, University of Cambridge
FRÉDÉRIC HÉLEIN (President) – IMJ (Institut de Mathématiques de Jussieu), Paris 7–Paris Diderot University
JOSEPH KOUNEIHIER (Director) – LUTH (Laboratoire Univers et THéories), Paris 7–Paris Diderot University & Nice Sophia Antipolis University
VOLODYA RUBTSOV (Examinator) – Department of Mathematics, University of Angers & ITEP (Institute for Theoretical and Experimental Physics), Moscow
THIERRY MASSON (Examinator) – CPT (Centre de Physique Théorique), Aix-Marseille University
JOHN STACHEL – Boston University & Center for Einstein Studies

2.2 Research

1/15	RESEARCHER Geometry, Algebra & Topology
9/17	Nomad Institute – Independent Research Marseille, France
7/15	RESEARCHER Visiting Fellow
8/15	Departamento de Matemáticas, Universidad Nacional & Departamento de Física, Universidad de los Andes Bogotá, Colombia
10/13	POSTDOCTORAL POSITION Quantum Gravity
10/14	CNRS, SPHERE Laboratory, UMR 7219 – Paris 7–Paris Diderot University, ERC Philosophy of Canonical Quantum Gravity Paris, France
9/09	RESEARCHER Mathematical–Physics
11/12	Department of Cosmology and Gravitation, LUTH – Laboratory Univers et Théories, UMR 8102 – Paris 7–Paris Diderot University Meudon, France
9/10	RESEARCHER Mathematical–Physics
4/11	Department of Theoretical Physics, INLN – Institut Non-Linéaire de Nice – UMR 7335, Nice Sophia Antipolis University Sophia-Antipolis, France
4/09	INTERNSHIP
6/09	Department Theory, APC Laboratory – Astroparticules et Cosmologie – Paris 7–Paris Diderot University Paris, France
5/07	INTERNSHIP
8/07	Departamento de Gravitacion y Cosmologia, UAM–I – Universidad Autónoma Metropolitana, Iztapalapa Mexico D.F., Mexico

3 Research Activities

3.1 Research Interests

Mathematics

GEOMETRY | Differential Geometry – Riemannian, (multi)symplectic, Poisson –, Geometry of Differential Equations, Noncommutative Geometry

ALGEBRA | Abstract Algebra, Linear Algebra, Representation theory, Lie Group, Lie Algebra, Pseudo-group, Groupoids, Algebroids

ALGEBRAIC GEOMETRY & TOPOLOGY | Homotopy, Homology, Cohomology, Higher Geometries, Higher Structures, ∞ -algebra, ∞ -topoi

ANALYSIS | Dynamical Systems, Harmonic Analysis, Functional Analysis, Spectral Analysis, Variational Calculus, Variational Sequences

Mathematical–Physics

QUANTUM FIELD THEORY | General Relativity, Gauge Theory, Topological Field Theory, Geometric Quantization, Deformation Quantization

GRAVITATION & GEOMETRY | Weyl–Einstein–Cartan, Quantum Gravity, String Theory, Loop Quantum Gravity, Quantum Geometry, Higher Gauge Gravity

3.2 Publications

Refereed Publications

- 1/17 F. Hélein and D. Vey, Curved space-times by crystallization of liquid fiber bundles, *Found. Phys.* (2017) 47: 1, 1–41, doi:10.1007/s10701-016-0039-2.
- 4/15 D. Vey, Multisymplectic formulation of vielbein gravity. I. De Donder–Weyl formulation, Hamiltonian $(n - 1)$ -forms, — *Class. and Quantum Grav.* 32 095005 (2015), doi:10.1088/0264-9381/32/9/095005

Proceedings

- 8/15 F. Hélein and D. Vey, Generalized Hamiltonian Gravity
D. Krupka et al. (eds.), *Extended Abstract Book, 20th International Summer School on Global Analysis and its Applications*, Stará Lesná, Slovakia, August 17-21, University of Presov (2015).
Synthesis-conferences-2015-[200216], doi:10.13140/RG.2.1.3953.2401.
- 6/12 D. Vey, Multisymplectic Geometry and the notion of observables,
AIP Conf. Proc. 1446 (2012). doi:10.1063/1.4727996

Preprint

- 12/16 D. Vey, 10-plectic formulation of gravity and Cartan connections
<https://hal.archives-ouvertes.fr/hal-01408289>
- 3/13 D. Vey, n -plectic Maxwell Theory
<https://arxiv.org/abs/1303.2192>

Edition

- 6/12 *Frontiers of Fundamental Physics: The Eleventh International Symposium*,
Editeurs: C. Barbachoux, J. Kouneiher, T. Masson and D. Vey.
AIP Conf. Proc. 1446 (2012), doi/abs/10.1063/v1446

Ongoings

- /18 D. Vey et al. Higher Geometry and Gravity
- D. Vey, Multisymplectic formulation of vielbein gravity II. Algebraic observable $(n - 1)$ -forms in the De Donder-Weyl theory
- D. Vey, Multisymplectic formulation of vielbein gravity III. Observables forms, canonically conjugate forms and bracket
- D. Vey, Higher symplectic formulation of BF theory and gravity,
- D. Vey, Variational and symplectic analysis of covariant first order gravity
- S. Barkat and D. Vey, Non-linear dynamics, chaos and self-organization in some natural theories

3.3 Conferences

Invitations ^b – Contributions [#] – Seminar [†]

- 28/11/15 Non-linear dynamics, chaos and self-organization in some natural theories ^b
Apothikes Gallery, Workshop Order and Disorder | Larnaca, Cyprus
SLIDES – PART 1, DOI:10.13140/RG.2.2.15489.56161
SLIDES – PART 2, DOI:10.13140/RG.2.2.31427.91685
- 25/11/15 Un chemin à travers l'ordre et le désordre ^b
Institut Français de Chypre, Workshop Order and Disorder, | Nicosia, Cyprus
- 21/8/15 Generalized Hamiltonian Gravity [#]
20th International Summer School on Global Analysis and its Applications. General Relativity: 100 years after Hilbert | Stará Lesná, Slovakia
SLIDES : DOI: 10.13140/RG.2.1.1337.7682
- 4/8/15 m -plectic formulation of n -bein gravity ^b
Universidad Nacional, Departamento de Matemáticas | Bogotá, Colombia
- 3/8/15 Observables and brackets in the Hamiltonian formulation of physical theories ^b
Universidad de los Andes, Departamento de Física | Bogotá, Colombia
SLIDES : DOI: 10.13140/RG.2.1.4024.7442
- 27/7/15 Hamiltonian Covariant formalism and higher symplectic geometry ^b
Universidad de los Andes, | Villa de Leyva, Colombia
- 11/6/15 Formulation multisymplectique de la vierbein gravité ^b
Department of Mathematics, Paris 7–Paris Diderot University | Paris, France
- 28/4/14 From Dirac heuristical approach to the multisymplectic general framework: The observables in the physical theories ^b
Congrès de la Société française d'histoire des sciences et des techniques, Université Claude Bernard, Lyon 1 | Lyon, France
- 5/2/14 Observables and Generalized Relativity: The n -plectic approach (2) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 29/1/14 Observables and Generalized Relativity: The n -plectic approach (1) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 4/12/13 Gravity and Topological Field Theory (5) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 27/11/13 Gravity and Topological Field Theory (4) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 20/11/13 Gravity and Topological Field Theory (3) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 13/11/13 Gravity and Topological Field Theory (2) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France
- 6/11/13 Gravity and Topological Field Theory (1) [†]
Séminaire Phil.Phys.Math. Paris 7–Paris Diderot University | Paris, France

- 31/10/12 | Towards Multisymplectic Gravity [#]
5th SCGSC (Strings, Cosmology and Gravity Student Conference), IHP (Institut Henri Poincaré) | Paris, France
- 24/6/11 | A Glimpse Into Multisymplectic Gravity. [†]
Séminaire LUTH (Laboratoire Univers et Théories), Paris 7–Paris Diderot University | Meudon, France
- 10/3/11 | Differential Geometry for General Relativity (2) [†]
Seminar at l’INLN (Institut Non-Linéaire de Nice) | Sophia-Antipolis, France
- 3/3/11 | Differential Geometry for General Relativity (1) [†]
Seminar at l’INLN (Institut Non-Linéaire de Nice) | Sophia-Antipolis, France
- 14/6/10 | Covariant formulation and Loop Quantum Gravity [†]
Seminar at LUTH (Laboratoire Univers et Théories), Paris 7–Paris Diderot University | Meudon, France

Organization Committee

- 2/14 | Philosophy of Mechanics: Mathematical Foundations,
ERC Philosophy of Canonical Quantum Gravity, Paris 7–Paris Diderot University,
12–14 February 2014 | Paris, France | <https://philoquantcoll1.sciencesconf.org/>
- 11/13 | Geometry and Physics II.
International Fall Workshop, IHP (Institut Henri Poincaré), 28–29 November 2013
| Paris, France | <http://geometryandphysics2.gie.im/>
- 3/11 | Quantum Gravity Quantum Field Theory: Physical, Mathematical and Philosophical Perspectives
J.A. Dieudonné Laboratory, Nice Sophia Antipolis University , 18–19 March 2011
| Nice, France
- 11/10 | Mathematical Physics Lectures: Quantum Gravity and Quantum Geometry
INLN (Institut Non-Linéaire de Nice), Nice Sophia Antipolis University , 19
November 2010. | Sophia-Antipolis, France
- 10/10 | Geometry and Physics I.
ENS (École Normale Supérieure), 29 October 2010 | Paris, France

Attended Meetings & Schools

- 6/17 | JIMPLYON2017 : Quantum Field Theories on Curved Space-Times
ICJ (Institut Camille Jordan), 7–9 June 2017 | Lyon, France
- 6/16 | Séminaire de Géométrie et Quantification, co-organized by Pierre Cartier, Yvette
Kosmann-Schwarzbach et Camille Laurent-Gengoux
IHP (Institut Henri Poincaré), 10 June 2016 | Paris, France
- 5/16 | CarloFest: Celebrating Carlo Rovelli’s 60 birthday. A Journey from Quantum
Gravity to Philosophy,
Aix-Marseille University, 23–27 May 2016 | Marseille, France

- 11/15 | General Relativity: A celebration of the 100th anniversary
IHP (Institut Henri Poincaré), 16-20 November 2015. | Paris, France
- 9/15 | Recent advances in General Relativity
IHP (Institut Henri Poincaré), 23-25 September 2015. | Paris, France
- 8/15 | 20th International Summer School on Global Analysis and its Applications
Congress Center Academia, 17-21 August 2015 | Stará Lesná, Slovakia
- 7/15 | Geometric, Algebraic and Topological Methods for Quantum Field Theory
Villa de Leyva Summer School, 20–31 July 2015 | Villa de Leyva, Colombia
- 7/11 | Eleventh international Symposium. Frontiers of Fundamental Physics FFP11
Paris 7–Paris Diderot University, 6–9 July 2011 | Paris, France
- 11/09 | Mathematical methods in general relativity and quantum field theories
Paris 7–Paris Diderot University, 4–6 November 2009 | Paris, France
- 7/09 | Univers Invisible, Conférence Grand Public
UNESCO (United Nations Educational, Scientific and Cultural Organization),
06–10 July 2009 | Paris, France
- 6–7/09 | Invisible Universe: Towards a new cosmological paradigm
UNESCO (United Nations Educational, Scientific and Cultural Organization), 29
June – 3 July 2009 | Paris, France
- 5/08 | Geometry, Topology, QFT and Cosmology
Paris-Meudon Observatory, 28-29 May 2008 | Paris, France
- 6/07 | Loops'07 International Conference on Quantum Gravity
Instituto de Matemáticas, Universidad Nacional Autónoma de México, 25-30 June
2007 | Morelia, Mexico

Attended Seminars

- 9/09 | Seminar of Geometry and Mathematical-Physics
- 9/15 | (Séminaire de Géométrie et Physique-Mathématique), IMJ (Institut de Mathématique de Jussieu) | Paris, France
- 10/13 | Seminar of Philosophy and Mathematical-Physics
- 11/14 | Paris 7–Paris Diderot University, ERC Philosophy of Canonical Quantum Gravity
| Paris, France

4 Teaching

4.1 Overview

- 9/10 | CPI1, CPI2, CPEI2, Doctoral School – **520H**
- 4/18 | Lec. : Lectures | Tut. : Tutorials

2010–2018	LEC.	TUT.	TOTAL
VOLUME HORAIRE	268H	252H	520H

4.2 Teaching Details

9/17 ASSISTANT PROFESSOR | Professor of Physics – **368H**
 4/18 Department of Physics and Engineering Sciences, EISTI | Pau, France

	LEC.	TUT.	TOTAL
CPI1 ³	136H	72H	208H
Electromagnetism	20	12	32
Thermodynamics	20	12	32
Point Mechanics	40	24	64
Geometrical Optics	40	24	64
Mathematics for Physics	16	—	16
CPI2 ⁴	108H	52H	160H
Electromagnetism	44	20	64
Mechanics of Solids	44	20	64
Thermodynamics	20	12	32

11/13 LECTURER | Doctoral School – **24H**
 2/14 SPHERE Laboratory, UMR 7219, Paris 7–Paris Diderot University, ERC Philosophy of Canonical Quantum Gravity | Paris, France

DOCTORAL SCHOOL	24H	—	24H
Gravity & Topology	10	—	10
Gravity & n -Geometry	14	—	14

9/11 LECTURER | Monitorat – **64H**
 9/12 Department of Physics, Paris 7–Paris Diderot University | Paris, France

CPEI2 ⁵	—	64H	64H
Mechanics of Solids	—	52	52
Mechanics of Fluids	—	12	12

9/10 LECTURER | Monitorat – **64H**
 9/11 Department of Physics, Paris 7–Paris Diderot University | Paris, France

CPEI2	—	64H	64H
Mechanics of Solids	—	52	52
Mechanics of Fluids	—	12	12

³CPI1 : Classe Préparatoire Intégrée, Première Année

⁴CPI2 : Classe Préparatoire Intégrée, Seconde Année

⁵CPEI2 : Classe Préparatoire aux Écoles d'Ingénieurs, Seconde Année