

Curriculum vitae of Jean-Michel Bismut

Born on 26th February 1948 in Lisbon (Portugal)

Graduate of Ecole Polytechnique (1970)

Docteur d'Etat in Mathematics at the University of Paris VI (1973)(« Analyse convexe et probabilités »).

Maître de Conférences at Ecole Polytechnique 1975-1987

Professor of Mathematics at University Paris XI (Orsay) 1981-

Visiting Professor in Vancouver 1980

Member of the Institute for Advanced Study (January-April 1984)

Invited to the World Congress in Berkeley (Geometry, 1986)

Visiting member of IHES 1988

Member of the Académie des Sciences 1991.

Gould Fellow at the Institute for Advanced Study (January-April 1994)

Former Editor at Annales I.H.P., Z. Wahrsch., Astérisque, Annales E.N.S.

Former Editor of Duke Math. Journal 1988-2000

Editor of Inventiones Mathematicae 1989-

Member of the Scientific Committee of the Newton Institute 1990-2000

Managing Co-editor of Inventiones 1995-

Member of the Academia Europaea 1998

Plenary speaker at ICM- Berlin 1998.

Member of the Executive Committee of I.M.U.: 1998-

Editor of GAFA 2001-

I started my mathematical life in probability and control theory. I was concerned with various aspects in the control of diffusions, and later in the Malliavin calculus. Probabilistic thinking has been central in my later work on Index theory, albeit in a somewhat hidden form.

I discovered index theory through a talk of Atiyah on its formal relations to path integrals. I proved a local version of the families index theorem of Atiyah-Singer, and worked on various aspects of the theory of determinant bundles. With Gillet-Soulé, I moved to questions related to algebraic geometry, in particular on the analytic aspects of Arakelov theory. With Lebeau, I studied the behaviour of the Quillen metrics under resolutions. Also I worked with W.P. Zhang on the Reidemeister and Ray-Singer torsion, and with Lott and Goette on characteristic classes of flat bundles, and with Labourie on the Verlinde formula.

Short bibliography

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- [3] The Atiyah-Singer index theorem for families of Dirac operators: two heat equation proofs. *Invent. Math.* 83, 91-151 (1986)
- [4] (with J. Cheeger) Eta-invariants and their adiabatic limits. *J.A.M.S.* 2, 33-70 (1989)
- [5] Koszul complexes, harmonic oscillators and the Todd class. *J.A.M.S.* 3, 159-256 (1990)
- [6] (with G. Lebeau) Complex immersions and Quillen metrics. *Publ.Math. IHES* 74, 1-297 (1991)
- [7] (with W. Zhang) Reidemeister, Milnor and Ray-Singer metrics : an extension of a theorem of Cheeger and Müller. *Société Mathématique de France: Astérisque* 205 , 1992
- [8] (with A. Berthomieu) Quillen metrics and higher analytic torsion forms. *J. Reine Angew. Math.* 457, 85-184 (1994)
- [9] (with J. Lott) Flat vector bundles, direct images and higher real analytic torsion. *J.A.M.S.* 8, 291-363 (1995)
- [10] Holomorphic families of immersions and higher analytic torsion forms. pp 1-240. *Astérisque n° 244 :SMF Paris* 1997
- [11] Local index theory, eta invariants and holomorphic torsion. *Proceedings of the International Congress of Mathematicians, Vol. I (Berlin, 1998). Documenta Mathematica*, 143-162 (1998).
- [12] (with F. Labourie) Symplectic geometry and the Verlinde formulas. *Surveys in differential geometry: differential geometry inspired by string theory*, 97-311 (1999).
- [13] (with S. Goette) Families torsion and Morse functions. *Astérisque* 275, 1-275 (2001).

