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Born Aug. 1st, 1970
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Research activities

Position Professeur, Université Paul Sabatier (IUT de Tarbes), Toulouse-Tarbes, France (since 2007).

Fields of interest Operator algebras, groupoids, pseudodifferential calculus, singular manifolds, index theory, Kasparov's theory.

Research work "Groupoids are key ingredients in index theory". With several collaborators I defined general tools giving some consistence to this assertion : pseudodifferential calculus on groupoids, analytic index, fredholmness condition... This gives a theory which can give results when applied to specific cases, provided one defines a groupoid adapted to the geometric situation. I did that for manifolds with corners, extending the b -calculus of Melrose, giving also a topological index theorem. Another application in progress is for Boutet de Monvel's calculus. This gives applications in PDEs, analysis on polyhedral domains, numerical analysis.
Another direction of my work, more recent, is on spectral representations of finite graphs, where a junction with groupoids C^* -algebras would open new development horizons.

Organisation of scientific events

- Organizer of the "université d'automne" of "Sauvons la Recherche", september 2005, and 2006
- Member of the Organizing Committee of the French-Canadian Congress of Mathematics, Toulouse Juillet 2004
- Organizer of the séminaire Méditerranéen d'Algèbre et Topologie, Toulouse, Mars 2002
- Member of the Organizing Committee of the conference "Algebraic K -theory and Homotopy Theory of Schemes", Toulouse Juillet 2000

Education

2005 HABILITATION À DIRIGER DES RECHERCHES. UNIVERSITÉ P. SABATIER.

Contribution of Non-Commutative Geometry to Index Theory on singular manifolds

▷ *Jury : A. Connes, André Legrand, E. Leichtnam (referee), Ryszard Nest (referee), Tien Zung N'Guyen, J. Renault (referee), G. Skandalis.*

1994-1997 PHD IN MATHEMATICS. UNIVERSITÉ PARIS 7, SUPERVISOR : G. SKANDALIS.

Groupoids and pseudodifferential calculus on manifolds with corners

▷ *Jury : A. Connes, P. Gerardin, E. Leichtnam, R. Melrose (referee), V. Nistor (referee), M. Pimsner, J. Renault, G. Skandalis.*

1991-1995 STUDENT OF THE ECOLE NORMALE SUPÉRIEURE. PARIS.

1995-1996 TEACHING ASSISTANT. UNIVERSITY OF PENNSYLVANIA, SUPERVISOR : M. PIMSNER.

Other activities

Administrative responsibilities

- Member of the Conseil d'Administration of the Université Paul Sabatier since 2006
- Vice-president of the commission des personnels enseignants of the UPS since 2006
- Coordinator of math teaching in Licence 1 2005-2007
- Member of the Council of the UFR MIG 2003-2007
- Member of the recruiting committee (section 25) since 2000
- Member of the Conseil d'Administration of the Institut Henri Poincaré since 2002
- Member of the Conseil d'Administration of the Société Mathématique de France, 2000-2004
- Collaborator of the Directeur de la Recherche, Ministère de la Recherche, 1998-2002

Associative responsibilities

- President and founding member of the association “Sauvons la Recherche”.
- Member of the Comité d'Initiative et de Propositions des Etats-Généraux de la Recherche, 2004
- Developer of the website “Sauvons la recherche”, 2003

References

Bibliography

- ▷ B.M., *An Atiyah-Singer Fredholm index theorem for manifolds with corners*, in preparation
- ▷ J. Aastrup, S.T. Melo, B.M. and E. Schrohe, *Boutet de Monvel's calculus and Groupoids, I : Singular Green Operators*, available on Arxiv/math.KT/0611336
- ▷ B.M. and Victor Nistor, *A Topological Index Theorem for manifolds with corners*, available on Arxiv/math.KT/0507601
- ▷ Robert Lauter, B.M. and Victor Nistor, *Spectral invariance for certain algebras of pseudodifferential operators*, *J. de l'Inst. Math. Jussieu* **4** (2005), Issue 03, 405–442
- ▷ Robert Lauter, B.M. and Victor Nistor, *Invariance spectrale des algèbres d'opérateurs pseudodifférentiels*, *C. R. Math. Acad. Sci. Paris* **334** (2002), no. 12, 1095–1099
- ▷ B.M., *Groupoids and pseudodifferential calculus on manifolds with corners*, *Journal of Functional Analysis* **199**(2003), 243-286
- ▷ Robert Lauter, B.M. and Victor Nistor, *Pseudodifferential analysis on groupoids and singular spaces*, *Documenta Mathematica*, **5** (2000), 625–655.
- ▷ B.M. and Pierre-Yves Le Gall, *K-theory of the indicial algebra of a manifold with corners*, *K-theory*, **23** (2001), 105–113.
- ▷ B.M., *Groupoids of manifolds with corners and index theory*, to appear in *Groupoids in analysis, geometry, and physics*, *Contemporary Math.* **282** (2001), 147–157.
- ▷ B.M., *Groupoïdes et calcul pseudo-différentiel sur les variétés à coins*, Ph.D. thesis, Université Paris 7, 1998.
- ▷ B.M., *Pseudodifferential calculus on manifolds with corners and groupoids*, *Proc. Amer. Math. Soc.* **127** (1999), no. 10, 2871–2881.
- ▷ B.M. and François Pierrot, *Indice analytique et groupoïdes de Lie*, *C. R. Acad. Sci. Paris Sér. I Math.* **325** (1997), no. 2, 193–198.

- ▷ *Boutet de Monvel's calculus and groupoids : Singular Green Operators : "Workshop Groupoids in operator algebras and noncommutative geometry, trimester Groupoids and Stacks in Physics and Geometry of the Institut Henri Poincaré", Paris, February 2007 .*
- ▷ *Boutet de Monvel's calculus and groupoids : Singular Green Operators : "International Conference OPERATOR ALGEBRAS AND TOPOLOGY", Moscow, January 2007 .*
- ▷ *Contribution of noncommutative geometry to index theory on singular spaces : "Brazilian Conference on Operator Algebras", Florianopolis, Brazil, July 2006.*
- ▷ *Contribution of noncommutative geometry to index theory on singular spaces : "Théorie de l'indice", CIRM, France, Mars 2006.*
- ▷ *Index theorems and singular manifolds : "C*-algebras and elliptic theory. II", Banach Center, Poland, January 2006.*
- ▷ *A topological index theorem on manifolds with corners : "Joint Meeting of AMS, DMV, and ÖMG", Mainz, Germany, June 2005.*
- ▷ *Groupoids and Index Theory in the Singular setting : "7th Conference on Geometry and Topology of Manifolds", Bedlewo, Banach Center, Poland, May 2005.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "French-Nordic Congress of Mathematicians", Reykjavik, Iceland, January 2005.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "First Joint Canada-France meeting of the mathematical sciences", Toulouse, France, July 2004.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "Groupes quantiques localement compacts et symétries quantiques", Marseille, France, June 2004.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "Second annual spring institute on noncommutative geometry and operator algebras", Vanderbilt University, USA, May 2004.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "Workshop on index theory and operator algebras, University of Sao Paulo (Brazil), April 2004.*
- ▷ *A Atiyah-Singer type index theorem on manifolds with corners : "C*-algebras and elliptic theory", Banach Center, Bedlewo(Poland), February 2004.*
- ▷ *Index theory in noncommutative geometry : a groupoids' approach : "Shanks lectures, conference on noncommutative geometry", Vanderbilt University, USA, May 2003.*
- ▷ *Groupoids and Index Theory : conference "Ellipticity and Parabolicity in Analysis and Geometry ", Potsdam, Germany, August 2001 (Organizers : J.B. Gil (Philadelphia), A. Parmeggiani (Bologna), T. Krainer (Potsdam), T. Schick (Münster)).*
- ▷ *Index theory on singular spaces and noncommutative geometry : conférence "3rd International ISAAC Congress", Berlin, Germany, August 2001 (Organizers : R.P. Gilbert (USA), A. Ben-Israel (USA), A. Bourgeat (France), E. Brüning (South Africa), Ju.A. Dubinskii (Russia)...).*
- ▷ *K-theory of the indicial algebra of a manifold with corners : conference "Geometric analysis", Potsdam, Allemagne, Octobre 2000 (Organizers : A. Connes, B.W. Schulze, N. Teleman).*
- ▷ *Groupoids of manifolds with corners and index theory : conference "Groupoids in Geometry, Analysis and Physics", Boulder, USA, June 1999 (Organizers : J. Kaminker, A. Ramsay, J. Renault, A. Weinstein).*
- ▷ *Groupoids and pseudodifferential calculus on manifolds with corners : conference "Operator algebras with symbolic structures on singular manifolds, Index theory, and asymptotics", Potsdam, Germany, February 1998 (Organizers : B.W. Schulze and E. Schrohe).*