

Severino Toscano do Rêgo MELO

Born in Recife, Brazil, 13 April 1960

Full Professor at Instituto de Matemática e Estatística, Universidade de São Paulo,

Rua do Matão 1010, São Paulo-SP, 05508-090, Brazil. Phone: 55-11-30916223.

Email: toscano@ime.usp.br. Web page: <http://www.ime.usp.br/~toscano/>.

### Education.

- Physics B.Sc, Federal University of Pernambuco (Recife), 1981.
- Mathematics M. Sc, Federal University of Pernambuco, 1983.
- Mathematics Ph.D, University of California at Berkeley, 1988. Thesis: Comparison Algebras with Periodic Symbols. Advisor: Heinz-Otto Cordes.

### Positions.

- Federal University of Pernambuco, 1982-1992.
- University of São Paulo, since 1992.

### Selected Research Articles.

- (1) *An algebra of singular integral operators with kernels of bounded oscillation and application to periodic differential operators* (with H. O. Cordes). *Journal of Differential Equations*, **75-2**, 216-238, 1988.
- (2) *A comparison algebra on a cylinder with semi-periodic multiplications*. *Pacific Journal of Mathematics*, **146-2**, 281-304, 1990.
- (3) *Characterizations of pseudodifferential operators on the circle*. *Proceedings of the American Mathematical Society* **125-5**, 1407-1412, 1997.
- (4) *Smooth Operators for the Action of  $SO(3)$  on  $L^2(\mathbf{S}^2)$*  (with H. O. Cordes). *Integral Equations and Operator Theory*, **28-3**, 251-260, 1997.
- (5) *Smooth Operators for the Regular Representation on Homogeneous Spaces*. *Studia Mathematica* **142-2**, 149-157, 2000.
- (6) *On a conjectured noncommutative Beals-Cordes-type characterization* (with Marcela I. Merklen). *Proceedings of the American Mathematical Society* **130-7**, 1997-2000, 2002.
- (7)  *$C^*$ -Structure and  $K$ -Theory of Boutet de Monvel's Algebra* (with Ryszard Nest and Elmar Schrohe). *Journal für die reine und angewandte Mathematik* **561**, 145-175, 2003.
- (8) *Norm closure of classical pseudodifferential operators does not contain Hörmander's class*. In: *Geometric analysis of PDE and several complex variables* (S. Chanillo et al., eds), *Contemporary Mathematics* **368**, pp 329-336, American Mathematical Society, Providence, RI, 2005.
- (9) *A  $K$ -Theoretic Proof of Boutet de Monvel's Index Theorem for Boundary Value Problems* (with Thomas Schick and Elmar Schrohe). *Journal für die reine und angewandte Mathematik* **599**, 217-233, 2006.
- (10)  *$K$ -Theory of pseudodifferential operators with semi-periodic symbols* (with Cíntia C. Silva). *K-Theory* **37-3**, 235-248, 2006.
- (11) *Pseudodifferential operators with  $C^*$ -algebra-valued-symbol: Abstract characterizations* (with Marcela I. Merklen). *Proceedings of the American Mathematical Society* **136-1**, 219-227, 2008.
- (12) *Boutet de Monvel's Calculus and Groupoids I* (with Johannes Aastrup, Bertrand Monthubert, Elmar Schrohe). *Journal of Noncommutative Geometry* **4-3**, 313-329, 2010.

- (13) *Families index for Boutet de Monvel operators* (with Thomas Schick and Elmar Schrohe). *Münster Journal of Mathematics* **6**, 343-364, 2013
- (14) *K-Theory of Boutet de Monvel algebra with classical SG-symbols on the half space* (with Pedro T. P. Lopes). *Math. Nachr.* **287-16**, 1804-1827, 2014.
- (15) *Operators with analytic orbit for the torus action* (with Rodrigo A. H. M. Cabral). *Studia Mathematica* **243-3**, 243-250, 2018.
- (16) *The principal-symbol index map for an algebra of pseudodifferential operators*. In: *K-Theory in Algebra, Analysis and Topology*. Contemporary Mathematics, American Mathematical Society, Providence, RI. To appear in 2020.

#### Book.

- (1) *Mecânica dos Fluidos e Equações Diferenciais* (with Francisco Moura-Neto), Instituto de Matemática Pura e Aplicada, Rio de Janeiro, 1991.

#### Selected Talks.

- (1) *An index formula for differential operators with semi-periodic coefficients. Elliptische Operatoren auf singulären und nichtkompakten Mannigfaltigkeiten*, Mathematisches Forschungsinstitut Oberwolfach, May 1987.
- (2) *A comparison algebra on a cylinder with semi-periodic multiplications. Topics in Pseudo-Differential Operators*, Oberwolfach, June 1989.
- (3) *A characterization of smooth operators for the regular representation of the circle*. Functional Analysis Colloquium, Mathematics Department, University of California at Berkeley, February 1996.
- (4) *Smooth operators under the action of some compact Lie groups*. Workshop *Pseudodifferential Operators and Microlocal Analysis*, Oberwolfach, April 1997.
- (5) Mathematics Colloquium at the *Universidad de la República*, Montevideo, October 1997.
- (6) Workshop *Ellipticity and Asymptotics in Spaces with Singularities*, Banach Center, Będlewo, September 2001.
- (7) School/Conference *Noncommutative Geometry and Quantum Groups*, Banach Center, Warsaw, September 2001.
- (8) Workshop *Operator Algebras and Microlocal Analysis*, Potsdam, November 2001.
- (9) *K-Theory of Boutet de Monvel's Algebra*. II Workshop Geometric Analysis of PDE and Several Complex Variables, Serra Negra, Brazil, July 2003.
- (10) *Boundary principal symbols in K-theoretic computations*. Workshop *C\*-Algebras and elliptic theory*, Banach Center, Będlewo, February 2004.
- (11) *A K-Theoretic Proof of Boutet de Monvel's index theorem*. Congrès Franco-Canadien de Mathématiques, Toulouse, July 2004.
- (12) *K-Theory of pseudodifferential operators with semi-periodic symbols*. Joint Meeting of the American, German and Austrian Mathematical Societies, Mainz, June 2005.
- (13) *A K-Theoretic Proof of Boutet de Monvel's index theorem for boundary-value problems*. Brazilian Operator Algebras Conference, Florianópolis, July 2006.

- (14) *K-Theory of Pseudodifferential Operators with Periodic Symbols on a Cylinder*. Second Symposium on Scattering and Spectral Theory, Serrambi (Pernambuco), August 2008.
- (15) *K-Theory of  $\Psi$ DOs with periodic symbols on a cylinder*. Workshop  $C^*$ -algebras and elliptic theory III, Banach Center, Będlewo, January 2009.
- (16) *Families index for Boutet de Monvel operators*. NestFest (Conference in Honor of Ryszard Nest's 60th Birthday), Copenhagen, September 2010.
- (17) *Applications of Operator Algebra K-Theory to Index Problems*. XV ELAM (Latin-American School of Mathematics), Córdoba, Argentina, May 2011.
- (18)  *$C^*$ -Algebra approach to the index theory of boundary-value problems*. Conference "K-Theory and Index Theory", Metz, June 2014
- (19)  *$C^*$ -Algebra approach to the index theory of boundary-value problems*. XX Coloquio Latinoamericano de Álgebra, Lima, December 2014
- (20) *Operators with analytic orbit for the torus action*. Conference on Analysis and Colloquium in Honor of the 60th Birthday of Elmar Schrohe, Hanover, October 2016.
- (21) *K-theory of pseudodifferential operators with semiperiodic symbols on a cylinder*. Mathematical Congress of the Americas, Noncommutative Geometry Session, Montréal, July 2017.
- (22) *The principal-symbol index map for an algebra of pseudodifferential operators*. K-Theory Conference, Argentina, 2018 ICM official satellite.

**PhD Students.**

- (1) Marcela Irene Merklen de Olivera, 2002. Thesis: Resultados motivados por uma caracterização de operadores pseudodiferenciais conjecturada por Rieffel.
- (2) Cíntia Cristina da Silva, 2005. Thesis: K-teoria de operadores pseudodiferenciais na reta com símbolos semiperiódicos.
- (3) David Pires Dias, 2008. Thesis: O caráter de Chern-Connes para  $C^*$ -sistemas dinâmicos calculado em algumas álgebras de operadores pseudodiferenciais.
- (4) Patrícia Hess, 2008. K-teoria de operadores pseudodiferenciais com símbolos semiperiódicos no cilindro.
- (5) Pedro Tavares Paes Lopes, 2012. K-Teoria e aplicações para cálculos pseudodiferenciais globais e seus problemas de fronteira.