

# **Alcides Buss**

## **Curriculum vitae**

- 15.05.1979** born in Palhoça (Brazil)
- 1997–2000** mathematics studies in Florianópolis
- 2000** Bachelor’s degree in mathematics at UFSC (Universidade Federal de Santa Catarina)
- 2001–2002** master studies in Florianópolis
- 2002** master’s degree in mathematics at UFSC (supervisor Ruy Exel)
- 2003** assistant professor at UFSC
- 2004–2007** doctoral studies in Münster (Germany)
- 2007** doctoral degree in mathematics (supervisors Ralf Meyer and Siegfried Echterhoff, Universität Münster)
- 2008** pos-doctoral studies at UFSC (supervisor Ruy Exel)
- 2013** pos-doctoral sabbatical year at Münster University, Germany
- 2018** pos-doctoral sabbatical year at Münster University, Germany
- since 2009** associate professor at UFSC

## **Awards and Honours**

- 1997–2000** Member of PET (Special Programm of Mathematics)
- 2000** Best Student at Federal University of Santa Catarina (UFSC) 1997–2000 having obtained the best grade among all students of mathematics.
- 2001–2014** Fellowships and grants from several organizations, including CAPES, DAAD, Humboldt and CNPq, Science without Borders (Ciências sem Fronteiras).
- 2010** Invited Speaker to participate in the “7th Regional Conference of Young Scientists of TWAS-ROLAC” at the Brazilian Academy of Sciences
- since 2012** CNPq research productivity scholarship (Bolsista de Produtividade em Pesquisa CNPq)

## **Foreign Languages (native Brazilian Portuguese)**

English and German

## **Students**

### **Master students**

- Paulo Ricardo Boff (finished in 2013)
- Bruno Brogni Uggioni (finished in 2013)

Alessandra Piske (finished in 2016)

Leonardo Businhani Biz (finished in 2017)

Fabio de Sales Casula (finished in 2017)

Celso Carvalho Antunes Junior (finished in 2017)

### **Doctoral students**

Damián Ferraro (finished in 2016)

Paulo Boff (finished in 2019, co-advisor, together with Siegfried Echterhoff)

Ado Raimundo Dalla Costa (finished in 2020)

### **Teaching Experience**

I have taught many basic and advanced courses in mathematics, among them:

- Calculus
- Linear Algebra
- Complex Analysis
- Algebra
- Analysis
- Operator Algebras
- $C^*$ -algebras
- Fell bundles and Hilbert Modules

### **Participation in Events**

- Together with Damián Ferraro and Fernando Abadie, I am organizing the Operator Algebras special session at the CLAM 2021 - Universidad de la Republica - Montevideo, 13-17 September, 2021. <https://clam2021.cmat.edu.uy/sesiones/24>
- Groups meet  $C^*$ -algebras, In celebration of Siegfried Echterhoff's 60th birthday, 28 June - 9 July 2021, Münster, Germany. Invited talk: On my collaboration with Siegfried Echterhoff. <https://www.uni-muenster.de/MathematicsMuenster/events/2021/Groups-meet-C-algebras.shtml>
- Glasgow Analysis Seminar - December 12, 2019, Glasgow, Scotland. Invited talk: Amenability and approximation properties of  $C^*$ -dynamical systems. <https://www.gla.ac.uk/schools/mathematicsstatistics/events/details/?id=10413>

- XXX International Workshop on Operator Theory and Applications -IWOTA - July 22-26, 2019, Lisbon, Portugal. Invited Speaker: Amenability of (partial) actions and Fell bundles. <https://iwota2019.math.tecnico.ulisboa.pt/>
- IV Workshop on Dynamics, Numeration and Tilings (IV FloripaDynSys) - 29 Apr-3 May 2019, Florianopolis, Brazil. Invited Speaker: Amenable actions and crossed products. <https://floripadynsys4.sciencesconf.org/>
- Together with Pere Ara, Ruy Exel and Francesc Perera, I organized the Operator Algebras special session at the II Encuentro Conjunto RSME-SEMA-SBM-SBMAC - Universidad de Cádiz - Espanha, 11 a 14 de dezembro, 2018. <http://spabrazmathcadiz18.uca.es/web/Congreso/?lang=en&page=s/s/11>
- Together with Daniel Gonçalves, Gilles Castro, Giuliano Boava e Viviane Beuter, I organized the ICM Operator Algebras Satellite Conference - ICMOA - July 26-30, 2018 in Florianópolis, Brazil. <http://mtm.ufsc.br/icmoa/>
- NCGOA 2018:  $C^*$ -algebras and Dynamics - May 14-19, 2018, Münster, Germany. <http://www.fields.utoronto.ca/activities/17-18/americas>
- Together with Paul Bressler, I organized the Operator Algebra special session at the XXII Coloquio Latino Americano de Algebra (XXII CLA) - 07-11 August 2017, Quito, Equador. [www.puce.edu.ec/claquito2017/](http://www.puce.edu.ec/claquito2017/)
- Satellite Conference on Operator Algebras (MCA2017) - 31 July -04 August 2017, Toronto, Canada. Invited Speaker: Proper actions of groups on  $C^*$ -algebras and applications [www.fields.utoronto.ca/activities/17-18/americas](http://www.fields.utoronto.ca/activities/17-18/americas)
- Mathematical Congress of the Americas - 24-28 July 2017, Montreal, Canada. Invited Speaker: Groupoid actions - The symmetries of non-commutative spaces <https://mca2017.org>
- IX Jornada de Álgebra, 04-06 Maio 2017, UEM, Maringá, Brasil. Invited Speaker, Plenary talk: Grupoides e suas ações sobre  $C^*$ -álgebras <http://www.dma.uem.br/ixja/>
- I Encontro Em Categorias Tensoriais E Suas Representações, 02-03 Março 2017, UFSC, Florianópolis, Brasil. Invited Speaker. Title of the talk: Simetrias não-comutativas: Um tratamento bicatagórico
- XXI Coloquio Latinoamericano de Álgebra - Buenos Aires - Argentina, 25-29 July 2016. Invited Speaker. Title of the talk: Groupoid fibrations and their  $C^*$ -algebras. <http://cms.dm.uba.ar/actividades/congresos/XXICLA/>

- Workshop on Dynamical Systems and Operator Algebras - Ottawa - Canada, 29-01 May 2016. Invited Speaker. Title of the talk: Inverse semigroups, groupoids and their actions on  $C^*$ -algebras. <http://www.fields.utoronto.ca/activities/15-16/dynamical>
- Summer program 2016 at IMPA. Minicourse "Symmetries and Bicat-egories in Noncommutative Geometry" taught in collaboration with prof. Ralf Meyer. <http://www.impa.br/opencms/en/ensino/calendarios/2016/verao.html>
- Organized, together with Pere Ara, Ruy Exel, and Enrique Pardo, the special session on Operator Algebras at the First Joint Meeting Brazil-Spain in Mathematics - Fortaleza - Brazil, 07-10 Dez 2015. <http://www.sbm.org.br/jointmeeting-spain/>
- Workshop on  $C^*$ -algebras: Geometry and Actions - Münster - Germany, 13-17 July 2015. Invited Speaker. Title of the talk: Symmetries of Non-commutative Spaces. [http://wwwmath.uni-muenster.de/u/wilhelm.winter/wwinter/workshop\\_2\\_focus\\_programme.html](http://wwwmath.uni-muenster.de/u/wilhelm.winter/wwinter/workshop_2_focus_programme.html)
- Organized, together with Daniel Gonçalves, Vladimir Pestov, and Marcelo Sobottka, the Workshop on Functional Analysis and Dynamical Systems - Florianópolis - Brazil, 23-27 Feb 2015. <http://mtm.ufsc.br/~alcides/fadys/>
- Organized, together with Roman Sasyk, the Special Session on Operator Algebras at the XX Coloquio Latinoamericano de Algebra - Lima - Peru, 08-12 Dez 2014. <https://sites.google.com/site/xxcoloquiovillamayor/>
- Partial Actions and Representations Symposium (PARS) - Gramado - Brazil, 11-15 May 2014. Speaker. Title of the talk: Actions of inverse semigroups on groupoids by partial equivalences. <http://mtm.ufsc.br/~exel/PARS/>
- Análise funcional geométrica e ações de grupos (Geometric functional analysis and group actions) - Florianópolis - Brazil, 19-21 Feb 2014. Invited Speaker. Title of the talk: Weakly proper actions, imprimitivity theorems and duality. [http://aix1.uottawa.ca/~vpest283/varia/programa\\_tematico2014.html](http://aix1.uottawa.ca/~vpest283/varia/programa_tematico2014.html)
- SFB Miniworkshop on  $C^*$ -Algebras,  $C^*$ -Bundles, and Group Actions - Münster - Germany, 25-29 November 2013. <http://wwwmath.uni-muenster.de/u/snigdhayan.mahanta/SFBWorkshop/SFBWorkshop.html>
- Noncommutative Geometry - Oberwolfach - Germany, 8 Sep - 14 Sep 2013. [http://www.mfo.de/occasion/1337/www\\_view](http://www.mfo.de/occasion/1337/www_view)

- From August 20 to August 24, 2013, organized, together with Siegfried Echterhoff, in Münster, Germany, the conference: Groups, Dynamical Systems and  $C^*$ -Algebras. <http://wwwmath.uni-muenster.de/u/eckters/groups-dynamical-systems/>
- Quantum Groups and 3-Manifold Invariants , IMPA, Rio de Janeiro, September 5-7, 2012. [http://www.impa.br/opencms/pt/eventos/store\\_old/evento\\_1213](http://www.impa.br/opencms/pt/eventos/store_old/evento_1213)
- IV Congreso Latinoamericano De Matemáticos (IV CLAM), Universidad Nacional de Córdoba, Córdoba, August 6-10, 2012. Invited Speaker. Title of the talk:  $C^*$ -Dynamical Systems and their Crossed Products. <http://www.famaf.unc.edu.ar/~ciem/clam2012/pages/Funtional%20analysis.html>
- Invited Research Visits to Münster and Göttingen Universities (one month each) in January and February 2012.
- XV Latinamerican School of Mathematics (XV ELAM) - CIMPA research school - Cordoba, Argentina, May 16-27, 2011. Invited Speaker. Title of the talk: Decompositions of  $C^*$ -algebras by Fell Bundles. [http://www.famaf.unc.edu.ar/~ciem/elam/index\\_en.htm](http://www.famaf.unc.edu.ar/~ciem/elam/index_en.htm)
- Participation in the summer programme at IMPA (Instituto de Matemática Pura e Aplicada), 2011. Invited (by Henrique Bursztyn) to give a mini-course: Introdução às  $C^*$ -álgebras.
- Organizer and Main Speaker of the Brazilian Operator Algebra Symposium, Florianópolis, Brazil, 2011. Title of the mini-course: Proper actions of groups on  $C^*$ -algebras. <http://www.mtm.ufsc.br/~exel/boas/>
- Topics in Noncommutative Geometry: 3era Escuela de Invierno Luis Santaló-CIMPA Research School, Buenos Aires, Argentina, 2010. (Supported by CIMPA.) <http://cms.dm.uba.ar/Members/gcorti/workgroup.GNC/3EILS>
- Extended Workshop on Groups and Group Actions in Operator Algebra Theory, Ottawa, Canada, 2010. Invited Speaker, Title of the talk: Fell bundle structures for  $C^*$ -algebras. <http://www.fields.utoronto.ca/programs/scientific/10-11/groups/>
- 69th Seminário Brasileiro de Análise, Florianópolis, São Paulo, Brazil, 2009.
- 27th Colóquio Brasileiro de Matemática, IMPA, Rio de Janeiro, Brazil, 2009.
- Workshop on Operator algebraic aspects of quantum groups, Leuven, Belgium, 2008.

- 67th Seminário Brasileiro de Análise, São Paulo, Brazil, 2008.
- 66th Seminário Brasileiro de Análise, São Paulo, Brazil, 2007.
- Meeting on the structure of  $C^*$ -algebras (in honor of Eberhard Kirchberg on the occasion of his 60th birthday), Münster, Germany, 2007. <http://wwwmath.uni-muenster.de/sfb/about/veranst/index2007.html>
- Workshop "Noncommutative Algebras", Münster, Germany, 2006. <http://wwwmath.uni-muenster.de/u/folkeri/2006/>
- Workshop  $C^*$ -Algebren, Oberwolfach, Germany, 2005. [http://www.mfo.de/occasion/0535/www\\_view](http://www.mfo.de/occasion/0535/www_view)
- Workshop on index theory, Münster, Germany, 2005. <http://homeweb1.unifr.ch/dessaia/pub/indextheory.html>
- 23th Colóquio Brasileiro de Matemática, IMPA, Rio de Janeiro, Brazil, 2001.
- Summer Course at IMPA, Rio de Janeiro, Brazil, 2000.
- 9th Seminário de Iniciação Científica, Florianópolis, Brazil, 1999.
- 22th Colóquio Brasileiro de Matemática, IMPA, Rio de Janeiro, Brazil, 1999.
- 21st Congresso Nacional de Matemática Aplicada e Computacional, Minas Gerais, Brazil, 1998.

## Complete publication list (inverse chronological order)

### Publications in refereed journals and proceedings

- [1] Fernando Abadie Alcides and Ferraro, *Amenability and Approximation Properties for Partial Actions and Fell Bundles*, Bull. Braz. Math. Soc. (N.S.) **53** (2022), no. 1, 173–227, DOI 10.1007/s00574-021-00255-8.
- [2] Alcides and Echterhoff Buss Siegfried and Willett, *Erratum for "The minimal exact crossed product"*, Doc. Math. **26** (2021), 1629–1632.
- [3] Alcides Buss and Aidan Sims, *Opposite algebras of groupoid  $C^*$ -algebras*, Israel J. Math. **244** (2021), no. 2, 759–774, DOI 10.1007/s11856-021-2190-5.
- [4] Paolo Antonini, Alcides Buss, Alexander Engel, and Timo Siebenand, *Strong Novikov conjecture for low degree cohomology and exotic group  $C^*$ -algebras*, Trans. Amer. Math. Soc. **374** (2021), no. 7, 5071–5093, DOI 10.1090/tran/8372.
- [5] Alcides Buss, Siegfried Echterhoff, and Rufus Willett, *The maximal injective crossed product*, Ergodic Theory Dynam. Systems **40** (2020), no. 11, 2995–3014, DOI 10.1017/etds.2019.25.
- [6] ———, *Injectivity, crossed products, and amenable group actions*, *K-theory in algebra, analysis and topology*, [2020] ©2020, pp. 105–137, DOI 10.1090/conm/749/15069.
- [7] Fernando Abadie, Alcides Buss, and Damián Ferraro, *Morita enveloping Fell bundles*, Bull. Braz. Math. Soc. (N.S.) **50** (2019), no. 1, 3–35, DOI 10.1007/s00574-018-0088-6. MR3935056

- [8] Alcides Buss, Siegfried Echterhoff, and Rufus Willett, *The minimal exact crossed product functor* (2018), Documenta Math. 23 (2018) 2043–2077. arXiv:1804.02725.
- [9] Alcides Buss, Rohit Holkar, and Ralf Meyer, *A universal property for groupoid  $C^*$ -algebras. I*, Proc. Lond. Math. Soc. (3) **117** (2018), no. 2, 345–375, DOI 10.1112/plms.12131. MR3851326
- [10] Alcides Buss, Siegfried Echterhoff, and Rufus Willett, *Exotic crossed products and the Baum-Connes conjecture*, J. Reine Angew. Math. **740** (2018), 111–159, DOI 10.1515/crelle-2015-0061. MR3824785
- [11] Alcides Buss and Ralf Meyer, *Crossed products for actions of crossed modules on  $C^*$ -algebras*, J. Noncommut. Geom. **11** (2017), no. 3, 1195–1235. arXiv:1304.6540. MR **3713016**
- [12] Alcides Buss, Ruy Exel, and Ralf Meyer, *Reduced  $C^*$ -algebras of Fell bundles over inverse semigroups*, Israel J. Math. **220** (2017), no. 1, 225–274. arXiv:1512.05570v2MR **3666825**
- [13] Alcides Buss and Ralf Meyer, *Inverse semigroup actions on groupoids*, Rocky Mountain J. Math. **47** (2017), no. 1, 53–159, DOI 10.1216/RMJ-2017-47-1-53. MR **3619758**
- [14] Alcides Buss and Siegfried Echterhoff, *Rieffel proper actions*, Journal of Operator Theory **75** (2016), no. 1, 49–73, DOI 10.7900/jot.2014oct28.2047. arXiv:1409.3977.MR **3474096**
- [15] Alcides Buss, Siegfried Echterhoff, and Rufus Willett, *Exotic crossed products*, Operator algebras and applications, Abel Symposium 2015, vol. 12, Springer, Berlin, 2016, pp. 61–108. arXiv:1510.02556v1.
- [16] Alcides Buss and Siegfried Echterhoff, *Weakly proper group actions, Mansfield’s imprimitivity and twisted Landstad duality*, Trans. Amer. Math. Soc. **368** (2016), no. 1, 249–280, DOI 10.1090/S0002-9947-2015-06406-X. MR **3413863**
- [17] ———, *Maximality of dual coactions on sectional  $C^*$ -algebras of Fell bundles and applications*, Studia Math. **229** (2015), no. 3, 233–262, DOI 10.4064/sm8361-1-2016. arXiv:1507.01756. MR **3454302**
- [18] ———, *Imprimitivity theorems for weakly proper actions of locally compact groups*, Ergodic Theory Dynam. Systems **35** (2015), no. 8, 2412–2457, DOI 10.1017/etds.2014.36. MR **3456601**
- [19] ———, *Universal and exotic generalized fixed-point algebras for weakly proper actions and duality*, Indiana Univ. Math. Journal **63** (2014), no. 6, 1659–1701. arXiv:1304.5697.
- [20] Alcides Buss, *Generalized fixed point algebras for coactions of locally compact quantum groups*, Münster J. Math. **6** (2013), 295–341, available at <http://nbn-resolving.de/urn:nbn:de:hbz:6-55309458343>. MR **3148214**
- [21] Alcides Buss, Ralf Meyer, and Chenchang Zhu, *A higher category approach to twisted actions on  $C^*$ -algebras*, Proc. Edinb. Math. Soc. (2) **56** (2013), no. 2, 387–426, DOI 10.1017/S0013091512000259. arXiv:0908.0455. MR **3056650**
- [22] Alcides Buss, Ruy Exel, and Ralf Meyer, *Inverse semigroup actions as groupoid actions*, Semigroup Forum **85** (2012), no. 2, 227–243, DOI 10.1007/s00233-012-9418-y. arXiv:1104.0811. MR **2969047**
- [23] Alcides Buss and Ruy Exel, *Inverse semigroup expansions and their actions on  $C^*$ -algebras*, Illinois J. Math. **56** (2012), no. 4, 1185–1212, available at <http://projecteuclid.org/euclid.ijm/1399395828>.
- [24] Alcides Buss, Ralf Meyer, and Chenchang Zhu, *Non-Hausdorff symmetries of  $C^*$ -algebras*, Math. Ann. **352** (2012), no. 1, 73–97, DOI 10.1007/s00208-010-0630-3. arXiv:0907.0339. MR **2885576**
- [25] Alcides Buss and Ruy Exel, *Fell bundles over inverse semigroups and twisted étale groupoids*, Journal of Operator Theory **67** (2012), no. 1, 153–205. arXiv:0903.3388.
- [26] ———, *Twisted actions and regular Fell bundles over inverse semigroups*, Proc. Lond. Math. Soc. (3) **103** (2011), no. 2, 235–270, DOI 10.1112/plms/pdr006. arXiv:1003.0613.

- [27] Alcides Buss, *Integrability of dual coactions on Fell bundle  $C^*$ -algebras*, Bull. Braz. Math. Soc. (N.S.) **41** (2010), no. 4, 607–641, DOI 10.1007/s00574-010-0028-6. arXiv:0908.0559. MR **MR2465264**
- [28] Alcides Buss and Ralf Meyer, *Square-integrable coactions of locally compact quantum groups*, Reports on Mathematical Physics **63** (2009), no. 1, 191–224. MR **2519468**
- [29] Alcides Buss, *A generalized Fourier inversion Theorem*, Bull. Braz. Math. Soc. (N.S.) **39** (2008), no. 4, 555–571. MR **MR2465264**
- [30] Alcides Buss and Ralf Meyer, *Continuous spectral decompositions of abelian group actions on  $C^*$ -algebras*, J. Funct. Anal. **253** (2007), no. 2, 482–514. MR **2370086**

### eprints and accepted papers

- [1] Alcides Buss, Damián Ferraro, and Camila F. Sehnem, *Nuclearity for partial crossed products by exact discrete groups* (2020), eprint. arXiv:2011.06686.
- [2] Alcides Buss, Siegfried Echterhoff, and Rufus Willett, *Amenability and weak containment for actions of locally compact groups on  $C^*$ -algebras, preprint* (2020), eprint. arXiv:2003.03469.
- [3] Fernando Abadie, Alcides Buss, and Damián Ferraro, *Amenability and approximation properties for partial actions and Fell bundles*, Bull Braz Math Soc, New Series Published online: May 2021.
- [4] Alcides Buss and Ralf Meyer, *Iterated crossed products for groupoid fibrations* (2016), eprint. arXiv:1604.02015.