

## Curriculum Vitae of Roberto Longo

*Born:* Roma, Italy, May 9, 1953

*Home:* Piazza Istria, 3 - I-00198 Roma

*Office:* Dipartimento di Matematica, Università di Roma “Tor Vergata”, Via della Ricerca Scientifica, 1 - I-00133 Roma, Italy.

*Phone & fax:* Office: (+39)-0672594690, Fax: (+39)-0672594699.

*Position:* Professor of Functional Analysis, Università di Roma “Tor Vergata,” since 1986

*Also:* Director of the Center for Mathematics and Theoretical Physics, Rome

National coordinator of the Italian PRIN research network “Operator Algebras”

Italian coordinator (pro-tempore) of the European Research Training Network in “Non-commutative Geometry”

Advanced Grant from the European Research Council, 2008-1013.

*Education:* Laurea in Matematica, July 23, 1975, Università di Roma “La Sapienza”

*Former Positions of Note:*

1974-77 C.N.R. (= National Research Council) scholarship in Analysis

1977-86 Assistant/Associate Professor in Analysis (Univ. of Roma I)

1993-1996 ‘Professore distaccato’ at Centro Linceo Interdisciplinare “B. Segre”, Accademia Nazionale dei Lincei (= Italian Academy of Sciences)

*Main talks:* Invited speaker at the “International Congress of Mathematicians”, Zürich, August 1994

Andrejewski lectures “Operator algebras and quantum index theorems in Quantum Field Theory”, Goettingen 2004

Plenary speaker at the “International Congress of Mathematical Physics”, Prague, August 2009

## List of Publications of Roberto Longo

- 1.– LONGO R., *A simple proof of the existence of the modular automorphisms in approximately finite dimensional von Neumann algebras*, Pacific Journal of Mathematics 70 (1978), 199.
- 2.– LONGO R., *On perturbed derivations of  $C^*$ -algebras*, Reports on Mathematical Physics 12 (1977), 1.
- 3.– LONGO R., *Automatic relative boundedness of derivations of  $C^*$ -algebras*, Journal of Functional Analysis, 34 (1979), 21.
- 4.– LONGO R., *Some aspects of  $C^*$ -dynamics*, Colloque Internationaux du CNRS n. 274, (1979).

- 5.– LONGO R., *Notes on algebraic invariants for non-commutative dynamical systems*, Communications in Mathematical Physics 69 (1979), 47.
- 6.– D'ANTONI C., LONGO R., ZSIDO L., *A spectral mapping theorem for locally compact groups of operators*, Pacific Journal of Mathematics, 103 (1980), 17-24.
- 7.– HERMAN R., LONGO R., *A note on the spectrum of an automorphism group*, Duke Mathematical Journal 47, (1980), 27.
- 8.– LONGO R., *A remark on crossed product of algebras*, Journal of the London Mathematical Society (2) 23, (1981), 531.
- 9.– LONGO R., *Simplicity of the crossed product and the derivations theorem*, Bollettino dell'Unione Matematica Italiana 18 A(1981), 417-422.
- 10.– HISLOP P.D., LONGO R., *Modular structure of the von Neumann algebras associated to the free massless scalar field theory*, Communications in Mathematical Physics, 84 (1982), 71-85.
- 11.– LONGO R., *Algebraic and modular structure of von Neumann algebras of Physics*, Proceedings of Symposia in Pure Mathematics 38, (1982), Part 2, 551.
- 12.– LONGO R., *Modular automorphism local algebras in quantum field theory*, VI International Conference on Mathematical Physics held in Berlin, August 11-20-1981 Lecture Notes in Physics, 153, (1982), 372, Springer.
- 13.– D'ANTONI C., LONGO R., *Interpolation by type I factors and the flip automorphism*, Journal of Functional Analysis 51, (1983), 361.
- 14.– DOPLICHER S., LONGO R., *Local aspects of superselection rules II*, Communications in Mathematical Physics 88, (1983), 361.
- 15.– DOPLICHER S., LONGO R., *Standard and split inclusions of von Neumann algebras*, Inventiones Mathematicae 75, (1984), 493-536.
- 16.– LONGO R., *Solution of the factorial Stone-Weirstrass conjecture*, Inventiones Mathematicae 76, (1984) 145-155.
- 17.– PELIGRAD C., LONGO R., *Non commutative topological dynamics and compact actions on  $C^*$ -algebras*, Journal of Functional Analysis 58, (1984), 157.
- 18.– LONGO R., *Remarks on pseudonormalcy*, in Lecture Notes in Mathematics n. 1139, Springer-Verlag, (1985), 347-349.
- 19.– LONGO R., *Simple and rigid injective subfactors*, proceedings of the conference on  $C^*$ -Algebras, MSRI, Berkeley (1985).
- 20.– BUCHHOLZ D., DOPLICHER S., LONGO R., *On Noether's theorem in quantum field theory*, Annals of Physics 170 (1986), 1-17.
- 21.– D'ANTONI C., DOPLICHER S., FREDENHAGEN K., LONGO R., *Convergence of local charges and continuity properties of  $W^*$ -inclusions*, Communications in Mathematical Physics 110, 325-348 (1987).
- 22.– LONGO R., *Simple injective subfactors*, Advances in Mathematics 63 (1987), 152-171.
- 23.– LONGO R., *The joint modular structure for inclusions of von Neumann algebras*, Contemporary Mathematics 62, (1987), 529-538.
- 24.– LONGO R., *Inclusions of von Neumann algebras and Quantum Field Theory*, in: "International Conference on Mathematical Physics", B. Simon, A. Truman, I.M. Davis editors Swansea (1988), Adam Hilger, Briston and New York.

- 25.– LONGO R., *Algebre di Operatori*, voce quadro per il Dizionario delle Scienze Fisiche, Enciclopedia Treccani.
- 26.– LONGO R., *Maximal abelian subalgebras with simple normalizer*, Proceedings of the American Mathematical Society, 107 (1989), 165-168.
- 27.– LONGO R., *Restricting a compact action to an injective subfactor*, Ergodic Theory and Dynamical Systems, 9 (1989), 127-135.
- 28.– BUCHHOLZ D., D'ANTONI C., LONGO R., *Nuclear maps and modular structures I. General properties*, Journal of Functional Analysis 88 (1990), 223-250.
- 29.– LONGO R., *Index of subfactors and statistics of quantum fields. I*, Communications in Mathematical Physics 126 (1989), 217-247.
- 30.– BUCHHOLZ D., D'ANTONI C., LONGO R., *Nuclear maps and modular structures. II Applications to quantum field theory*, Communications in Mathematical Physics 129 (1990), 115-138.
- 31.– LONGO R., *Index of subfactors and statistics of quantum fields. II: Correspondences, braid group statistics and Jones polynomial*, Communications in Mathematical Physics 130 (1990), 285-309.
- 32.– LONGO R., *Index theory of subfactors and braid group statistics*, in Algebraic theory of superselection sectors", D. Kastler ed. World Scientific (1990).
- 33.– KOSAKI H., LONGO R., *A remark on the minimal index of subfactors*, Journal of Functional Analysis 107 (1992), 458-470.
- 34.– LONGO R., *Minimal index and braided subfactors*, Journal of Functional Analysis 109 (1992), 98-112.
- 35.– GUIDO D., LONGO R., *Relativistic invariance and charge conjugation in Quantum Field Theory*, Communications in Mathematical Physics 148 (1992), 521-551.
- 36.– BUCHHOLZ D., DOPLICHER S., LONGO R., ROBERTS J.E., *A new look at Goldstone theorem*, Reviews in Mathematical Physics, Special Issue (1992) 49-83.
- 37.– ACCARDI L., LONGO R., *Martingale convergence of generalized conditional expectations*, Journal of Functional Analysis 118 (1993), 119-130.
- 38.– BUCHHOLZ D., DOPLICHER S., LONGO R., ROBERTS J.E., *Extensions of automorphisms and gauge symmetries*", Communications in Mathematical Physics 155 (1993), 123-134.
- 39.– LONGO R. *Minimal index and unimodular sectors*, in Proceedings of International Symposium on "Quantum and Non-Commutative Analysis", ed. H. Araki et al., Kluwer Academic Publishing Co. 335-340 (1993).
- 40.– BRUNETTI R., GUIDO D., LONGO R., *Modular structure and duality in conformal Quantum Field Theory*, Communications in Mathematical Physics 156, 201-219 (1993).
- 41.– LONGO R., *Problems on von Neumann algebras suggested by Quantum Field Theory*, in: "Subfactors", Proceedings of the Taneguchi symposium, Kyoto 1993.
- 42.– LONGO R., *Algebre di Operatori*, voce quadro per il Dizionario delle Scienze Fisiche, Enciclopedia Treccani (1993).
- 43.– LONGO R., *A duality for Hopf algebras and for subfactors. I*, Communications in Mathematical Physics 159, 133-150 (1994).
- 44.– BRUNETTI R., GUIDO D., LONGO R., *Group cohomology, modular theory and space-time symmetries*, Reviews in Mathematical Physics 7 , 57-71 (1995).

- 45.– GUIDO D., LONGO R., *An algebraic spin and statistics theorem.I*, Communications in Mathematical Physics 172 (1995), 517-533.
- 46.– LONGO R., REHREN K.H., *Nets of subfactors* - Reviews in Mathematical Physics 4, 567-597 (1995).
- 47.– LONGO R., *von Neumann algebras and Quantum Field Theory* - Proceeding of the International Congress of Mathematicians, Zürich 1994 - Birkhauser, Basel, Switzerland 1995.
- 48.– LONGO R., *Inclusions of von Neumann algebras and superselection structure* - Proceeding of the International Congress of Mathematical Physics, Parigi 1994, International Press, Cambridge 1995.
- 49.– GUIDO D., LONGO R., *The conformal spin and statistics theorem*, Communications in Mathematical Physics 181, 11-35, (1996).
- 50.– LONGO R., ROBERTS J.E., *A Theory of Dimension* - K-Theory 11, 103-159 (1997).
- 51.– LONGO R., *On the spin-statistics relation for topological charges*, Proceedings of the conference 'Operator algebras and quantum Field Theory', Rome, July 1996, International Press, Cambridge 1997.
- 52.– DOPLICHER S., LONGO R., ROBERTS J.E., ZSIDO L. *editors*, *Operator Algebras and Quantum Field Theory*", Proceedings of the conference held in Rome, Accademia dei Lincei, July 1996. International Press, Cambridge 1997.
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- 54.– IZUMI M., LONGO R., POPA S., *A Galois correspondence for compct groups of automorphisms of von Neumann algebras with a generalization to Kac algebras*, Journal of Functional Analysis 155 (1998), no. 1, 25–63.
- 55.– BERTOZZINI P., CONTI R., LONGO R., *Covariant sectors and positivity of the energy*", Communications in Mathematical Physics 141, 471-492 (1998).
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- 70.– KAWAHIGASHI Y., LONGO R. *Classification of local conformal nets. Case  $c < 1$*  - Annals of Mathematics 160, 493-522 (2004)
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- 73.– LONGO R., XU F. *Topological sectors and a dichotomy in conformal field theory*, Communications in Mathematical Physics 251, 321-364 (2004).
- 73.– LONGO R., REHREN K.H., *Local fields in boundary CFT*, Reviews in Mathematical Physics 16, 909-960 (2004).
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- 77.– BOCA F.-P., BRATTELI O., LONGO R., SIEDENTOP H. EDS., “Advances in Operator Algebras and Mathematical Physics”, Proceedings of the “20th Conference on Operator Theory”, Sinaia, June-July , 2003, Theta Foundation, Bucharest 2005.
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- 79.– KAWAHIGASHI Y., LONGO R., *Local conformal nets arising from framed vertex operator algebras*, Advances in Mathematics 206, 729-751 (2006).
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- 81.– BUCHHOLZ D., D'ANTONI C., LONGO, R. *Nuclearity and thermal states in Conformal Field Theory*, Communications in Mathematical Physics 270, 267 - 293 (2007).
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- 83.– CARPI S., KAWAHIGASHI Y., LONGO, R., *Structure and classification of superconformal nets*, Annales Henri Poincaré 9 (2008) no. 6, 1069-1121
- 84.– LONGO R. *Real Hilbert subspaces, modular theory,  $SL(2, \mathbf{R})$  and CFT*, in: Von Neumann algebras in Sibiu, 33-91, Theta Ser. Adv. Math., 10, Theta, Bucharest, 2008.
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- 86.– BRASSELET, J.-P., LEGRAND, A., LONGO, R., MISHCHENKO, A. Collection of materials presented at the Conference “Geometry and Operator Theory” dedicated to N. Teleman’s 65th birthday celebration, Ancona, 20-22 September 2007. Russ. J. Math. Phys. 16 (2009), no. 3, 345 - 349
- 87.– CARPI S., HILLIER, R. KAWAHIGASHI Y., LONGO, R., *Spectral triples and the super-Virasoro algebra*, Communications in Mathematical Physics 295, 71-97 (2010)
- 88.– LONGO, R., MARTINETTI, P., REHREN K.H., *Geometric modular action for disjoint intervals and boundary conformal field theory*, Reviews in Mathematical Physics 22, 331-354 (2010)
- 89.– CARPI, S., KAWAHIGASHI, Y., LONGO, R., *On the Jones index for conformal subnets*, Letters in Mathematical Physics, 92 (2010), no. 2, 99-108.
- 90.– LONGO, R., WITTEN, E., *An algebraic construction of boundary Quantum Field Theory*, Communications in Mathematical Physics 303, 213-232 (2011)
- 91.– LONGO R., REHREN K.H., *Boundary Quantum Field Theory on the Interior of the Lorentz Hyperboloid*, Communications in Mathematical Physics (in press)
- 92.– CAMASSA, P., LONGO, R., TANIMOTO, Y. WEINER, M., *Thermal States in Conformal Field Theory. I*, Communications in Mathematical Physics 309 (2012), no. 3, 703-735.
- 93.– CAMASSA, P., LONGO, R., TANIMOTO, Y. WEINER, M., *Thermal States in Conformal Field Theory. II*, Communications in Mathematical Physics (in press).