

Personal information

Name: Paolo Ghiggini

Date of birth: 23 July 1974

Citizenship: Italian

Contact

Address: Laboratoire de Mathématiques Jean Leray
BP 92208
2, Rue de la Houssinière
44322 Nantes Cedex 03

Email: paolo.ghiggini@univ-nantes.fr

Telephone number: +33 2 51 12 59 12

Education

29 juin 2004 *Perfezionamento in Matematica* (Ph.D. in Mathematics),
Scuola Normale Superiore di Pisa.

16 Juillet 1998 *laurea* (B.Sc.) in Mathematics, University of Pisa

Research interests

Symplectic and contact geometry, low-dimensional topology.

Employment

1. Chargé de Recherche, CNRS, October 2008–present
2. Sherman Fairchild Research Fellowship, Caltech, September 2007– August 2008
3. Post-doc CIRGET, Université du Québec à Montréal, September 2005 – August 2007
4. Post-doc EDGE at the Mathematisches Institut, Ludwig–Maximilians–Universität, München, October 2003–May 2004

Publications

Articles

1. “Sutures and contact homology I”, *Geom. Topol.* 15 (2011), no. 3, 1749–1842, (with V. Colin, K. Honda and M. Hutchings);
2. “Equivalence of Heegaard Floer homology and embedded contact homology via open book decompositions”, *Proc. Natl. Acad. Sci. USA* 108 (2011), no. 20, 8100–8105 (with V. Colin and K. Honda);
3. “Knot Floer homology detects genus-one fibred knots”, *Amer. J. Math.* 130 (2008), no. 5, 1151–1169;
4. “On tight contact structures with negative maximal twisting number on small Seifert manifolds”, *Algebr. Geom. Topol.* 8 (2008), no. 1, 381–396;
5. “Tight contact structures on some small Seifert fibred 3–manifolds”, *Amer. J. Math.* 129 (2007) no. 5, 1403–1447 (with P. Lisca and A. Stipsicz);
6. “Linear Legendrian curves in T^3 ”, *Math. Proc. Cambridge Philos. Soc.* 140 (2006), no. 3, 451–473;
7. “Infinitely many universally tight contact manifolds with trivial Ozsváth–Szabó contact invariants”, *Geom. Topol.* 10 (2006), 335–357;
8. “Ozsváth–Szabó invariants and fillability of contact structures”, *Math. Z.* 253 (2006), no. 1, 159–175;
9. “Classification of tight contact structures on small Seifert 3–manifolds with $e_0 \geq 0$ ”, *Proc. Amer. Math. Soc.* 134 (2006), no. 3, 909–916 (with P. Lisca and A. Stipsicz) ;
10. “Strongly fillable contact 3–manifolds without Stein fillings” *Geom. Topol.* 9 (2005), 1677–1687;
11. “Tight contact structures on Seifert manifolds over T^2 with one singular fibre”, *Algebr. Geom. Topol.* 5 (2005), 785–833;
12. “Stability theorems for symplectic and contact pairs”, *Int. Math. Res. Not.* (2004) ; 3673–3688 (with G. Bande and D. Kotschick);
13. “On the classification of tight contact structure”, in “Topology and Geometry of manifolds” *Proceedings of Symposia in Pure Mathematics*, volume 71 (2003), editors Gordana Matić and Clint McCrory (with S. Schönenberger).

preprints

1. The equivalence of Heegaard Floer homology and embedded contact homology III: from hat to plus” (with V. Colin and K. Honda), arXiv:1208.1526;
2. “The equivalence of Heegaard Floer homology and embedded contact homology via open book decompositions II” (with V. Colin and K. Honda), arXiv:1208.1077;
3. “The equivalence of Heegaard Floer homology and embedded contact homology via open book decompositions I” (with V. Colin and K. Honda), arXiv:1208.1074;
4. “Embedded contact homology and open book decompositions” (with V. Colin and K. Honda), arXiv:1008.2734;
5. “Tight contact structures on the Brieskorn spheres $-\Sigma(2, 3, 6n - 1)$ and contact invariants” (with J. Van Horn-Morris), arXiv:0910.2752;
6. “Giroux torsion and twisted coefficients” (with K. Honda), arXiv:0804.1568;
7. “The vanishing of the contact invariant in the presence of torsion” (with K. Honda and J. Van Horn-Morris, arXiv:0706.1602).

Research Visits

1. Simons Center for Geometry and Physics, 24th September – 24th October 2012 (program “Holomorphic curves and low dimensional topology”);
2. MSRI, January – May 2010 (program “Homology Theories of Knots and Links”);
3. University of Aarhus, 1st September 2008 – 15th October 2008 (visiting professor)
4. Princeton University, March 2005 – April 2005
5. University of Georgia at Athens, January – May 2002 (non degree seeking graduate student)
6. AIM, September – December 2000 (special quarter on contact topology)

Talks

1. Simon Center for Geometry and Physics, “From ECH to HF: The Story You Have Never Heard”, 2nd October 2012;
2. Holomorphic Curves and Low Dimensional Topology (Stanford University): “Knot filtrations in embedded contact homology”, 7th August 2012;

3. Symplectic field theory workshop VI (Ludwig-Maximilians-Universität München): “Embedded contact homology and Heegaard Floer homology”, 24th and 26th July 2012;
4. University of Cologne: “ HF^+ is isomorphic to ECH ”, 9th May 2012;
5. McMaster University: “On the isomorphism between Heegaard Floer homology and embedded contact homology”, 13th of October 2011;
6. Université du Québec à Montréal: “On the isomorphism between Heegaard Floer homology and embedded contact homology”, 12th October 2011;
7. MIT: “Knot filtrations in embedded contact homology”, 21st April 2011;
8. Workshop “Interactions between contact symplectic topology and gauge theory in dimensions 3 and 4” (Banff): “HF to ECH via open book decompositions I”, 23rd March 2011;
9. Université Libre de Bruxelles: “Contact homology for manifolds with convex boundary”, 28th February 2011;
10. University of Lyon: “Homologie de contact plongée et décompositions à livre ouvert”, 4th February 2011;
11. Mathematisches Forschungsinstitut Oberwolfach: “From Heegaard Floer homology to embedded contact homology via open book decompositions”, 22nd September 2010;
12. Humboldt-Universität Berlin: “Embedded contact homology and open book decompositions”, 1st December 2010
13. 7-th Bolyai-Gauss-Lobachevsky Conference: “From HF to ECH via open books”, 5th – 9th July 2010;
14. Istanbul Contact Geometry and Topology Workshop: “Tight contact structures on the Brieskorn spheres and contact invariants”, 7th – 10th June 2010 (mini-course);
15. Summer school “Homologie d’entrelacs”, Institut Mathématique de Jussieu: “Introduction to Legendrian knots and contact homology” (mini-course), 29th June – 3rd juillet 2009;
16. University of Aarhus: “Contact homology for sutured contact manifolds”, 17th June 2009;
17. Gökova Geometry / Topology Conference: “Tight contact structures on the Seifert manifolds $-\Sigma(2, 3, 6n - 1)$ ”, 26th May 2009;
18. University of Warwick: “Classification of tight contact structures on small Seifert manifolds”, 12th March 2009;

19. Cambridge University: “Contact homology for manifold with convex boundary”, 11th mars 2009;
20. Workshop on Symplectic Geometry, Contact Geometry and Interactions (Strasbourg): “Giroux torsion, twisted coefficients, and applications”, 30th January 2009;
21. Institut Mathématique de Jussieu: “Applications de l’homologie de Heegaard Floer à coefficients tordus à la topologie de contact”, 25th November 2008;
22. Institut Mathématique de Jussieu: “Homologie de Heegaard Floer homology et remplissabilité de structures de contact”, 24th November 2008;
23. University of Aarhus: “Classification of Tight Contact Structures on $\Sigma(2, 3, 6n - 1)$ ”, 14th October 2008;
24. Conference “3-manifolds and contact topology”, Renyi Institut (Budapest): “Tight contact structures on $\Sigma(2, 3, 6n1)$ ”, 29th September 2008;
25. Second Canada-France Congress — Session on topology, knots and related fields : “Seiberg–Witten equations on sutured manifolds”, 3rd June 2008;
26. University of Aarhus: “Contact Structures, Heegaard Floer Homology, and Fibred Knots”, 31st January 2008;
27. University of Aarhus: “Giroux’s torsion and the contact invariant in Heegaard Floer homology”, 16th August 2007;
28. Oporto meeting on Geometry, Topology and Physics: “Knot Floer homology, contact structures, and fibred knots”, 6th July 2007;
29. Georgia Topology Conference: “Giroux’s 2π -torsion kills the contact invariant”, 16th May 2007;
30. ENS Lyon: “Knot Floer homology detects genus-one fibred knots”, 20th March 2007;
31. University of Nantes: “Knot Floer homology detects genus-one fibred knots”, 19th March 2007;
32. Workshop in Topology (Banff International Research Station): “Contact structures, Heegaard Floer homology, and fibred knots”, 1th March 2007;
33. VII Workshop on Symplectic and Contact Topology (Universidad Carlos III de Madrid): “Knot Floer homology detects genus-one fibred knots”, 19th August 2006;
34. Park City Mathematical Institute 2006: “Knot Floer homology detects genus-one fibred knots”, 29 June 2006;

35. Conference on Topology, Geometry, and Physics In Honor of John Morgan's 60th Birthday (Columbia University): "Knot Floer homology detects genus-one fibred knots", 30th April 2006;
36. University of Georgia at Athens: "Tight contact manifolds with trivial Ozsváth–Szabó invariants", 12th December 2005;
37. Purdue University: "Strongly fillable contact 3-manifolds without Stein fillings", 21st November 2005;
38. Rice University: "Ozsváth–Szabó invariants and fillability of contact manifolds", 11th April 2005;
39. Clay Mathematical Institute summer school "Floer Homology, Gauge Theory and Low Dimensional Topology" (Budapest): "Classification of Tight Contact structures on small Seifert manifolds with $e_0 = 0$ ", 16th June 2004;
40. Conference "Invariants in Low Dimensional Topology" (Budapest): "Classification of Tight Contact structures on some Seifert manifolds", 16 Juin 2003;

Teaching

1. Autumn 2009, Universté de Nantes, "Introduction to contact topology" (French);
2. 1 septembre – 15 octobre 2008, Aarhus University, Introduction to contact topology (English);
3. Winter 2008, Caltech, "Introduction to geometry and topology" (English);
4. Autumn 2007, Caltech, "Introduction to symplectic topology" (English);
5. Spring 2007, Université du Québec à Montréal, "Algebraic topology II" (French)
6. Autumn 2006, McGill University (Montréal), teaching assistant for "Vectors, Matrices and Geometry";
7. Autumn 2004, Università di Pisa, teaching assistant for "Matematica I" (calculus) for engineering students;
8. Spring 2003, Università di Pisa, teaching assistant for "Linear Algebra" for computer science students.