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## CURRICULUM VITAE

Ana G. Lecuona

### Employment

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- From August 2023:* **University of Glasgow** (UK)  
Professor of Mathematics
- August 2020 – August 2023* **University of Glasgow** (UK)  
Senior Lecturer
- May 2018 – August 2020* **University of Glasgow** (UK)  
Lecturer
- 2012 – May 2018:* **Aix - Marseille Université** (France)  
Maître de Conférences
- 2011 – 2012:* **Penn State University** (USA)  
Post-doc position
- 2010 – 2011:* **École Normale Supérieure de Lyon** (France)  
Post-doc position

### Education

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- 2007 – 2010:* **Università di Pisa** (Italy)  
Ph.D. in Mathematics  
*Advisor & Defense date:* Prof. Paolo Lisca; September 15, 2010.  
*Thesis title:* On the slice-ribbon conjecture for Montesinos knots
- 2006 – 2007:* **Universidad Complutense de Madrid** (Spain)  
Master in Mathematical Research  
*Advisor & Discussion date:* Prof. Enrique Arrondo; November 6, 2007.  
*Project title:* On the topology of complex projective manifolds
- 2001 – 2006:* **Universidad Complutense de Madrid** (Spain)  
Degree in Mathematics

### Fellowships and Awards

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- 2021 – 2023:* **EPSRC New Investigator Award EP/T028408/1** (Value: £148K )
- 2017 – 2020:* **Prime d'encadrement doctoral et de recherche** (Value: 16,800 €)
- 2017 – 2018:* **2 Délégations CNRS** (Value: 18,750 € each)
- March – June 2012:* **Chercheur invité CNRS** (Visiting researcher, value: 7,200 €)  
Université de Pau et des Pays de l'Adour (France) with Vincent Florens
- 2009 – 2012:* **F.P.I. post-doctoral fellowship** (Value: 72,000 €)

2007 – 2009: **Ph.D. fellowship**  
Università di Pisa (Italy)

## Publications and Preprints

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### Preprints:

- (with P. Aceto, M. Golla and K. Larson) *Surgeries on torus knots, rational balls and cabling*  
Preprint arXiv: 2008.06760

### Published articles:

- (with N. Bédaride and F. Gähler) *Cohomology groups for spaces of twelve-fold tilings*  
**IMRN**, no. 18, (2022), 14181–14254.
- (with A. Degtyarev and V. Florens) *Slopes and signatures of links*  
**Fund. Math.**, 258, no. 1, (2022), 65–114.
- (with A. Degtyarev and V. Florens) *Slopes of links and signature formulas*  
**Topology, geometry, and dynamics—V. A. Rokhlin-Memorial**, *Contemp. Math.*, 772, Amer. Math. Soc., (2021), 93–105.
- (with D. Kasprowski, P. Lambert-Cole, M. Land) *Topologically flat embedded 2-spheres in specific simply connected 4-manifolds*  
**2019–20 MATRIX annals**, *MATRIX Book Ser.*, 4, Springer, Cham, (2021), 111–116.
- *Complementary legs and rational balls*  
**Michigan Mathematical Journal**, 68(3) (2019), 637–649.
- (with P. Aceto and M. Golla) *Handle decompositions of rational balls and Casson-Gordon invariants*  
**Proceedings of the American Mathematical Society**, 146(9), (2018) 4059–4072.
- *A note on graphs and rational balls*  
**RACSAM** (Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas), 112(3), (2018) 705–716.
- (with B. Audoux and F. Roukema) *On hyperbolic knots in  $S^3$  with exceptional surgeries at maximal distance*  
**Algebr. Geom. Top.**, 18(4), (2017) 2371–2417
- (with A. Degtyarev and V. Florens) *The signature of a splice*  
**IMRN** (International Mathematics Research Notices) **8** (2017), 2249–2283
- (with K. Baker and D. Buck) *Surgeries on knots between  $S^1 \times S^2$  and lens spaces*  
**Comm. Anal. Geom.** **24-3**, (2016) 431–470
- *On the slice-ribbon conjecture for pretzel knots*  
**Algebr. Geom. Topol.** **15-4**, (2015), 2133–2173
- (with X.D. Hou, G. L. Mullen, and J. A. Sellers) *On the Dimension of the Space of Magic Squares Over a Field*  
**Linear Algebra and its Applications** **438** (2013), no. 8, 3463–3475
- *On the slice-ribbon conjecture for Montesinos knots*  
**Trans. Amer. Math. Soc.** **364** (2012), 233–285
- (with P. Lisca) *Stein fillable Seifert fibered 3-manifolds*  
**Algebr. Geom. Topol.** **11**, (2011), 625–642

## Scientific Activity

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### Organization of international conferences

- Combinatorial and Gauge theoretical methods in low dimensional topology and geometry, 3 – 7 June 2024, Centro Di Giorgi (Pisa, Italy). Co-organized with P. Aceto and P. Ghiggini.
- 4-Manifolds: From Above and Below, 12 – 16 September 2022, CIRM, (Marseille, France). Co-organized with A. Conway and S. Friedl.  
<https://conferences.cirm-math.fr/2593.html>
- Thematic month at CIRM: Low Dimensional topology, 29 Jan. – 23 Feb. 2018. Co-organized with B. Audoux, P. Haissinsky and L. Paoluzzi.  
<https://conferences.cirm-math.fr/1673.html>
- Knotted embeddings in dimensions 3 and 4, 12 – 16 February 2018, CIRM, (Marseille, France). Co-organized with B. Audoux and S. Baader.  
<https://conferences.cirm-math.fr/1893.html>
- Stein Manifolds, Contact Structures and Knots, Sept. 28 – 1 Oct. 2015, CIRM, (Marseille, France). Co-organized with P. Lisca et A. Stipsicz.  
<http://lalondeteleman.weebly.com/stein-manifolds-contact-structures-and-knots.html>

### Seminar organization

- Weekly seminar “Geometry and Topology”, University of Glasgow (2019–2020).
- Weekly seminar “Géométrie, Dynamique, Topologie” at CMI (2013–2014).
- Weekly working group “Autour des 3-variétés” at CMI (2014–2015).
- Weekly working group “Trisections and 4-manifolds” at CMI (2016–2017).

### PhD Supervision

- Tanushree Shah: 2019 – 2022
- Lisa Lokteva: 2019 – 2023
- Isacco Nonino: 2022 – ongoing
- El Hayes: 2022 – ongoing

**Member of the Ph.D. thesis committee** of Paolo Aceto.

*Advisor:* Paolo Lisca (Università di Pisa), *Defense:* April 2015.

**Internal PhD examiner** of Daniel Waite, University of Glasgow, April 2020.

### Member of hiring committees for the positions

- Postdoctoral position in the Geometry Group at SISSA, Trieste, (Italy), March 2022.
- Rankin-Sneddon Fellowship. University of Glasgow, April 2021.
- Maitre de Conférences in Pure Mathematics. University of Orsay, Paris, May 2018.
- Maitre de Conférences in Pure Mathematics. University of Montpellier, May 2016.
- Maitre de Conférences in Pure Mathematics. University of Aix-Marseille, May 2014.

### Outreach

- The Lockdown Live Lounge series, “Is it knotted? A mathematician answers”, Glasgow, Nov. 18 2020.
- Royal Institution Masterclass, “To infinity and beyond!”, Glasgow, Dec. 7, 2019.
- Talk in the series “Kécékssa...?”, *Title:* “What is a knot?”, Marseille, Nov. 5, 2015.

- Televised 13 minutes talk on “The beauty of the abstract”, Marseille, Dec. 1, 2016.  
<http://treize.lif.univ-mrs.fr/>

**Referee and Reviewer for** Acta Mathematica Hungarica, Algebraic and Geometric Topology, American Journal of Mathematics, Annales de la faculté des sciences de Toulouse, Annali della Scuola Normale Superiore di Pisa, International Mathematics Research Notices, Proceedings of the Edinburgh Mathematical Society, Topology and its Applications, AMS Surveys and Monographs and Reviewer for MathSciNet.

**Research proposal reviewer** for the Israel Science Foundation (ISF).

**Glasgow representative** of the Edinburgh Mathematical Society, 2019 – 2022.

**EMS representative** in the LMS Committee for Women and Diversity in Mathematics, 2020 – ongoing.

**LMS CWDM representative** in the LMS Early Career Research Committee, 2021 – ongoing.

**Invited member** to the EPSRC Peer Review College, 2022 – ongoing.

**Invited member** to the Advisory Board of the EDI stream during the set up phase of the National Academy, 2022 – ongoing.

## Talks in Workshops, Conferences and Schools

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- Oct. 2023:* **XXIX Encuentro de Topología** - declined: maternity leave  
Alicante, (Spain)
- Aug. 2023:* **Mini-course in the ‘Journées du GDR Tresses’** - declined: maternity leave  
Malmousque, Marseille (France)
- March 2023:* **Women and Maths: Geometric topology**  
METU, Ankara (Turkey) and online
- Jan. 15 – 21, 2023:* **Low-Dimensional Topology**  
Oberwolfach (Germany)
- June 20 – 24, 2022:* **Surfaces in 4-manifolds**  
Le Croisic, Nantes (France)
- June 6 – 8, 2022:* **WINGS - Women in Number Theory and Geometry**  
West Lexham, Norfolk (UK)
- April 12 – 14, 2022:* **British Topology Meeting in Durham**  
Durham, (UK)
- June 20 – 26, 2021:* **Low-dimensional topology mini-symposium of the online ECM**  
Eslovenia - online.
- June 17 – 21, 2019:* **Knot Concordance and Low-Dimensional Manifolds**  
Le Croisic, Nantes (France)
- January 7 – 18, 2019:* **Topology of Manifolds: Interactions Between High and Low Dimensions**  
Melbourne University (Australia)
- June 11 – 15, 2018:* **Geometric structures on 3 and 4 manifolds**  
IUC Dubrovnik (Croatia)
- June 4 – 8, 2018:* **“Characters in low-dimensional topology” – in honour of Steven Boyer**  
Université du Québec à Montréal, Montréal (Canada)
- May 25 – 28, 2018:* **Geometry and Topology of 3-manifolds workshop**  
Okinawa Institute of Science and Technology, Okinawa (Japan)
- Jan. 18 – 21, 2018:* **Khovanov Homotopy Type**  
Renyi Institute, Budapest (Hungary)

- Jan. 30 – Feb. 3, 2017:* **3 manifold workshop**  
Cambridge University, Cambridge (UK)
- Oct. 17 – 21, 2016:* **Conference on 4-manifolds and knot concordance**  
MPI Mathématiques, Bonn (Germany)
- June 5 – 11, 2016:* **3 and 4 manifold topology and geometry. A celebration of the works of Fintushel and Stern**  
IUC, Dubrovnik (Croatia)
- Oct. 28 – Nov. 22, 2015:* **Stein manifolds, contact structures and knots**  
CIRM, Marseille (France)
- June 22 – 24, 2015:* **Rencontres Vaskho : topologie en petite dimension**  
FRUMAM, Marseille (France)
- April 27 – May 1, 2015:* **Knots and Links in Fluid Flows, From helicity to knot energies**  
Independent University, Moscow (Russia)
- September 22 – 24, 2014:* **Workshop of Young Researchers in Mathematics 2014**  
Universidad Complutense, Madrid (Spain)
- June 30 – July 1, 2014:* **First joint international meeting RSME-SCM-SEMA-SIMAI-UMI**  
UPV/EHU-Ordainketak, Bilbao (Spain)
- Jan. 30 – Feb. 1, 2014:* **Workshop on Symplectic Geometry, Contact Geometry and Interactions**  
Instituto Superior Técnico, Lisbon (Portugal)
- June 24–28, 2013:* **Topologie et géométrie en petite dimension à Toulouse à l’occasion des 60 ans de Michel Boileau**  
Institut de Mathématiques de Toulouse (France)
- April 4–6, 2013:* **Swiss knots 2013**  
Université de Bern (Switzerland)
- June 21–25, 2011:* **Summer school on closed orbits and variational methods**  
School at Neuchâtel (Switzerland)
- May 30– June 1, 2011:* **Transfrontalières d’Algèbre et Géométrie**  
Atelier thématique Bilbao-Pau-Zaragoza (Bayonne, France)
- March 13–18, 2011:* **Rencontres à La Llagonne**  
Workshop organized by Université Paul Sabatier (Toulouse, France)

## Workshops, Conferences and Schools attended

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- Jan. 15 – 21, 2023:* **Workshop on Low Dimensional Topology**  
Oberwolfach, (Germany)
- Feb. 16 – 22, 2020:* **Workshop on Low Dimensional Topology**  
Oberwolfach, (Germany)
- Sept. 16 – 20, 2019:* **4-manifold Workshop**  
MPI Bonn, (Germany)
- August 19 – 23, 2019:* **Pseudoholomorphic Curves and Gauge Theory in Low-dimensional Topology**  
Durham Symposium, (UK)
- Nov. 30 – Dec. 2, 2018:* **Fabrizio Broglia’s retirement conference**  
Universita degli studi di Pisa, (Italy)
- Sept. 4 – 6, 2018:* **British Topology Meeting**  
Open University, Milton Keys (UK)
- June 6 – 10, 2017:* **Swiss Knots**  
University of Bern, (Switzerland)
- April 10 – 13, 2017:* **Physics and knot homologies**  
Cambridge University, Cambridge (UK)
- Feb. 22–26, 2016:* **Synchronizing Smooth and Topological 4-Manifolds**  
BIRS, Banff (Canada)
- June 29 – July 3, 2015:* **Géométries en action, une conférence en l’honneur d’Étienne Ghys**  
UMPA, ENS-Lyon (France)

- June 1–3, 2015:* **Swiss Knots**  
Université de Genève, Genève (Switzerland)
- May 25–30, 2015:* **Twenty-second Gökova geometry/topology conference**  
Gökova (Turkey)
- January 30 – 31, 2015:* **IX Workshop on Symplectic Geometry, Contact Geometry and Interactions**  
UMPA, ENS-Lyon (France)
- August 26–30, 2014:* **The 10th William Rowan Hamilton Geometry and Topology Workshop on Homological invariants in low-dimensional topology and geometry**  
Trinity College Dublin (Ireland)
- June 23–27, 2014:* **Topologie géométrique et quantique en dimension 3, Session de la SMF des États de la Recherche 2014**  
CIRM, Marseille (France)
- February 10–13, 2014:* **Winterbraids in Dijon**  
Institut de Mathématiques de Bourgogne, Dijon (France)
- July 1–5, 2013:* **Rolfsenfest**  
CIRM, Marseille (France)
- June 17–21, 2013:* **Printemps topologique à Toulouse**  
Workshop at La Llagonne (France)
- March 24–29, 2013:* **Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4**  
BIRS Center at Banff (Canada)
- January 10–12, 2013:* **CAST meeting**  
Les Diablerets (Switzerland)
- November 5–9, 2012:* **Aspects of representation theory in low-dimensional topology and 3-dimensional invariants**  
CNRS/JSPS joint seminar, Carry-le-Rouet (France)
- July 8–21, 2012:* **CAST 2012 Summer School**  
Budapest (Hungary)
- June 11–15, 2012:* **Arrangements in Pyrenees**  
School and Workshop on Hyperplane arrangements and related topics (France)
- December 9–11, 2011:* **The Tech topology conference**  
Conference at Georgia Institute of Technology (USA)
- May 23–27, 2011:* **Swiss Knots 2011**  
Conference at Thun (Switzerland)
- January 27–29, 2011:* **Workshop on Symplectic Geometry, Contact Geometry, and Interactions**  
Conference at Uppsala University (Uppsala, Sweden)
- June 7–10, 2010:* **Istanbul contact geometry and topology workshop**  
Conference at IMBM (Istanbul, Turkey)
- Oct. 20–24, 2008:* **Progressi Recenti in Geometria Reale e Complessa**  
Conference at CIRM (Levico Terme, Italy)

## Visiting Periods

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- September 2018:* **CIRM** (France)  
‘Research in Pairs’, with Paolo Aceto and Daniele Celoria.
- April–July 2017:* **Cambridge University** (UK)  
As part of the special semester “Homology Theories in Low Dimensional Topology.”
- June 2016:* **Centro di Giorgi** (Italy)  
‘Research in Pairs’, with Paolo Aceto and Marco Golla.

## Seminar Talks

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- (planned) March 21, 2024: Bristol Topology and Geometry seminar, (UK)  
Feb. 8, 2023: Heriot-Watt Topology and Geometry seminar, Edinburgh (UK)  
Oct. 26, 2022: PiWORKS seminar series – online  
June 14, 2021: Oxford Topology seminar, (UK)  
May 12, 2021: Scheffield Colloquium, (UK)  
March 20, 2019: Aberdeen seminar (UK)  
Feb 21, 2019: Durham G&T seminar (UK)  
Feb 13, 2019: Cambridge G&T seminar (UK)  
Oct. 31, 2018: North British Geometric Group Theory Seminar, Newcastle (UK)  
May 17, 2018: Scottish Topology Seminar, Glasgow (UK)  
April 20, 2018: Teich Seminar, Marseille (France)  
January 9, 2018: Institut de Mathématiques de Jussieu, Paris (France)  
October 6, 2017: Institut Camille Jordan, Lyon (France)  
April 25, 2017: School of Mathematics and Statistics, Sheffield (UK)  
March 23, 2017: Université de Genève, Geneva (Switzerland)  
December 15, 2016: Hausdorff Institute for Mathematics, Bonn (Germany)  
November 17, 2016: Département de Mathématiques de Montpellier, Montpellier (France)  
May 18, 2016: Uppsala Mathematics department, Uppsala (Sweden)  
April 1, 2016: Alfréd Rényi Institute of Mathematics, Budapest (Hungary)  
February 19, 2016: Institut Fourier, UFR de Mathématiques, Grenoble (France)  
May 6, 2015: Università degli studi di Pisa, Pisa (Italy)  
March 10, 2015: Laboratoire de Mathématiques Nicolas Oresme, Caen (France)  
April 16, 2014: UMPA, ENS-Lyon (France)  
March 6, 2014: Université de Genève, Genève (Switzerland)  
February 20, 2014: Département de Mathématiques d’Orsay, Paris (France)  
June 11, 2013: Institut de Mathématiques de Jussieu, Paris (France)  
April 24, 2013: Université de Pise (Italy)  
March 4, 2013: CMI, Aix-Marseille Université (France)  
February 14, 2013: Université de Montpellier (France)  
February 4, 2013: Université de Glasgow (UK)  
May 14, 2012: Université de Bourgogne, Dijon (France)  
May 7, 2012: CMI, Université de Provence, Marseille (France)  
March 30, 2012: Institut Fourier, UFR de Mathématiques, Grenoble (France)  
March 21, 2012: Institut de Mathématiques de Toulouse (France)  
November 17, 2011: University of Nevada, Reno (USA)  
November 11, 2011: University of Buffalo (USA)  
November 3, 2011: PATCH seminar, Haverford College (USA)  
October 20, 2011: Boston College (USA)  
October 7, 2011: Penn State University, Altoona (USA)  
September 19, 2011: Georgia Institute of Technology (USA)  
June 21, 2011: Université de Nêuchatel (Switzerland)  
June 1, 2011: Université de Pau et des Pays de l’Adour, Bayonne (France)  
May 11, 2011: Cambridge University (UK)  
March 28, 2011: Mathematisches Institut der Universität zu Köln (Germany)  
March 11, 2011: Institut Camille Jordan, Lyon (France)  
February 7, 2011: University of Glasgow, Scotland (UK)  
December 14, 2010: Institut Mathématiques de Jussieu, Paris (France)  
November 25, 2010: Laboratoire de Mathématiques Jean Leray, Nantes (France)  
November 12, 2010: Alfréd Rényi Institute of Mathematics (Hungary)  
October 15, 2010: École Normale Supérieure de Lyon (France)  
June 17, 2010: Humboldt-Universität zu Berlin (Germany)  
November 12, 2009: Università di Pisa (Italy)

November 10, 2009: Max Planck Institute for Mathematics in the Sciences (Leipzig, Germany)

November 13, 2008: Universidad Complutense de Madrid (Spain)

## Teaching Activity

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- 2022/2023: In the University of Glasgow:  
- 4H Topics in Algebra (only instructor; lectures and tutorials)
- 2021/2022: In the University of Glasgow:  
- 4H Topics in Algebra (only instructor; lectures and tutorials)
- 2020/2021: In the University of Glasgow:  
- 2A lecturer (1 section; 1 tutorial)  
- 4H Topics in Algebra (only instructor; lectures and tutorials)  
- SMSTC core course: Algebraic topology (Graduate course)
- 2019/2020: In the University of Glasgow:  
- 2F Class Head (lecturer for 1 section; 1 tutorial)  
- 4H Topics in Algebra (only instructor; lectures and tutorials).  
- 3H algebra tutorials (3 groups).
- 2018/2019: In the University of Glasgow:  
- 2F Class Head (lecturer for 2 sections; 2 tutorials)  
- 3H algebra tutorial
- 2017/2018: Standard teaching service as Maitre de Conferences (192 hours):  
- Instructor for Linear Algebra in Level 2.  
- Instructor for Algebra in Master 1.  
- Teaching assistant for Topology in Level 3.
- 2016/2017: Reduced teaching service (Délégation CNRS: 96 hours):  
- Instructor for Linear Algebra in Level 2.
- 2015/2016: Standard teaching service as Maitre de Conferences (192 hours):  
- Teaching assistant for Algebra in Master 1.  
- Instructor for Linear Algebra in Level 2.  
- Instructor for Geometry and polynomials in Level 1.
- 2014/2015: Standard teaching service as Maitre de Conferences (192 hours):  
- Instructor for Algebraic Topology in Master 2.  
- Instructor for Linear Algebra in Level 2.  
- Instructor for Geometry and polynomials in Level 1.
- 2013/2014: Standard teaching service as Maitre de Conferences (192 hours):  
- Teaching assistant for Analysis and Algebraic Structures Level 2.  
- Instructor for Linear Algebra in Level 1.  
- Instructor for Geometry and polynomials in Level 1.  
- Instructor for Problems Workshop Level 1.
- 2012/2013: Reduced teaching service (128 hours):  
- Instructor for Mathematical tools in Science-Nature-Earth-Enviroment.  
- Instructor for Geometry and polynomials in Level 1.

### Undergraduate student supervision and projects:

2022: (ongoing) Colin McCulloch's Master project

2021: Levy Nagy's Master project

Title: *Geometric Structure and Volume of Hyperbolic knots*



- 2020: Christopher Johnson's Master project  
Title: *2-bridge knots, 2-fold branched covers, and 4-manifolds*  
Three 4th year projects:  
- Chloé Hashimoto-Cullen, *Substitution tilings*  
- Katy Angus, *Aperiodicity of the Penrose Rhombuses*  
- Paula Duffin, *Wallpaper groups*
- 2019: Four 4th year projects:  
- Justin Huang, *Rational surgery and lens spaces*  
- Matthew McCann, *The HOMFLY polynomial*  
- Tamara del Corral Cardenas, *The Alexander polynomial: a knot invariant*  
- Cameron Wilson, *Vasiliev invariants and the Kontsevich Integral*
- 2018: Three 4th year projects:  
- Ewan Danks, *Knot Theory in DNA Research*.  
- Nicholas Nugent, *Knot Theory and the Tait Flying Conjecture*.  
- Alison McNeill, *Crossing Number of Composite Knots*.
- 2017: - Duncan Sussfeld, 3rd year project: *Braid groups and Bureau representation*.  
- Group project (M. Bennadji, K. Hichma, F. Poujol, A. Senay), 2nd year.  
*Project Title: Penrose tilings and aperiodicity*.
- 2016: Group project (M. Jayle, N. Laube, S. Lunadier, A. Mouret, D. Sussfeld),  
2nd year project. *Project Title: The Cantor set and its properties*.
- 2015: Aneth Mancini, 4th year project: *Alexander Polynomial and Knot Theory*.
- 2014: Eve Pachoud, 3rd year project.  
Joint supervision with Fionntan Roukema (Sheffield University).  
*Project Title: Study of knot invariants and surfaces*.