Tim Hosgood

https://thosgood.com
timhosgood@posteo.net

13th November, 2019

Current research

Defining Chern classes in Hodge and Deligne (i.e. holomorphic) cohomology for coherent sheaves on paracompact complex-analytic manifolds using twisting cochains and simplicial methods. Following on from work by Brylinski and McLaughlin; Grivaux; O'Brian, Toledo, and Tong; and Green.

Research interests

Homotopy theory, derived algebraic geometry, higher category theory.

Education/Employment

2019 –	**Scientist**
Université de Montpellier	as part of the DerSympApp project (ERC grant 768679).
2016 –	**Doctorat (en Mathématiques)**
Université d'Aix-Marseille	under Julien Grivaux and Damien Calaque.
2012 – 2016	**MMath (Masters in Mathematics), BA Mathematics**
University of Oxford	First class honours, upper second-class honours (resp.).
2006 – 2012	**A-Levels, GCSEs**
Kingsley School, Bideford	Maths, Further Maths, Music (A*), French, Spanish (A)

Papers

An introduction to varieties in weighted projective space
Weighted projective space arises when we consider the usual geometric definition for projective space and allow for non-trivial weights. Using the Riemann-Roch theorem to calculate $\ell(E, nD)$ where E is a non-singular cubic curve inside $\mathbb{P}^2$ and $D = p \in E$ is a point we obtain a non-negatively graded ring $R(E)$ by taking the direct sum of the $\mathcal{L}(E, nD)$ for $n \geqslant 0$. This gives rise to an embedding of E inside the weighted projective space $\mathbb{P}(1, 2, 3)$.
arxiv.org/abs/1604.02441

Death and extended persistence in computational algebraic topology
The main aim of this paper is to explore the ideas of persistent homology and extended persistent homology, and their stability theorems, using ideas from [Bubenik and Scott, 2014; Cohen-Steiner, Edelsbrunner, and Harer, 2007; and Cohen-Steiner, Edelsbrunner, and Harer, 2009], as well as other sources. The secondary aim is to explore the homology (and cohomology) of non-orientable surfaces, using the Klein bottle as an example. We also use the Klein bottle as an example for the computation of (extended) persistent homology, referring to it throughout the paper.
arxiv.org/abs/1609.00920

Conference and seminar talks

2019 **Twisting cochains and twisted complexes**
Young Topologists Meeting, Lausanne.

2018 **Des méthodes simpliciales pour la géométrie complexe**
Séminaire de l'équipe AGT d'Aix-Marseille.

2017 **Les classes de Chern des fibrés vectoriels dans la cohomologie de Hodge**
Séminaire Géométrie Complexe.

Teaching

Université d'Aix-Marseille

2018 – 2019

Maths en anglais. *3rd-year undergraduates, English*
Real analysis (Heine-Borel, Bolzano-Weierstrass, etc.); helping French students to improve their mathematical English.
Calcul différentiel. *2nd-year undergraduates, French*
Basic topology and multivariable calculus.

2017 – 2018

Algèbre linéaire. *2nd-year undergraduates, French*
Vector spaces, linear maps, eigenspaces, Jordan normal form.

Kingsley School, Bideford

2013

Further Mathematics A-Level. *Sixth-form, English*
FP1, FP2, D2 (Edexcel).

Mathematics A-Level. *Sixth-form, English*
C1 – C4, D1, M1 (Edexcel).

Other professional experience

2016
Hertford College, University of Oxford

IT Technician and Help-desk Manager
Led site-based IT development and network infrastructure upgrades. Managed staff and student help desk for the entire college, with responsibilities including hardware repair and software support. Improved registration systems with shell-scripting automation (Ruby, Bash). Various server management and maintenance tasks.

2014
Metaswitch, Cambridge

Network Functions Virtualisation Intern
Worked as part of the NFV team on the Virtual Route Reflector. Researched and presented information to the whole team on various aspects of network configuration management (e.g. NETCONF, TACACS+) before implementing them. Set up test systems for aforementioned aspects, as well as others. Gained experience with C, Bash, and Python. Completed an Effective Communications course, as well as a three-day hackathon.