Pauline Bailet

Doctor in Mathematics

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Academic CV

Profile

My research areas are **Algebraic Geometry** and **Combinatorics**. More precisely, I am interested in the following topics: topology and singularities of complex algebraic varieties, sheaves theory, Hodge structure, hyperplane arrangements, combinatorics, tropical geometry.

Professional positions

2015–2017 **Post-doctoral researcher**, *Bremen University*, Bremen, Allemagne.
Bremen TRAC - Cofund Fellow.

2014–2015 **Post-doctoral researcher**, *Hokkaido University*, Sapporo, Japon.
JSPS Fellow.

Education

Doctoral studies

2011–2014 **Ph.D. in Algebraic Geometry - Teaching assistant**, *Université de Nice - Sophia Antipolis*, Nice, *Grade: Très honorable*.
Laboratory: J. A. Dieudonné; Workgroup: Algebra, Topology and Geometry;
Thesis defense: June, 11, 2014.

Title *Arrangements d'hyperplans*

Supervisor A. Dimca

Jury members A. Dimca (Supervisor), M. Granger (Examiner), S. Papadima (Examiner), A. Parusinski (President), J. Valles (Examiner and Rapporteur), A. Suciu (Rapporteur).

Abstract This Ph.D.thesis studies Milnor fibers of complex hyperplane arrangements and their monodromy action.

Graduate studies

2008–2011 **Masters of Mathematics**, *Université de Nice - Sophia Antipolis*, Nice, *Grade: Très bien*.

Master thesis *Arrangements d'hyperplans*

Supervisor A. Dimca

Abstract We give a brief introduction to hyperplane arrangements theory and its interplay with the combinatorics. We give a new proof of a formula due to Roberts (1889), and then we study the cardinality of Milnor fibers of hyperplane arrangements defined in finite fields.

2006–2008 **Bachelor in Mathematics**, *Université Nice - Sophia Antipolis*, Nice, *Grade: Bien*.

2005–2006 **Preparatory class for high scientific school**, *Lycée Masséna*, Nice.

Languages

English Fluent

German Intermediate

Japanese Beginner

French Mother tong

Computer skills

Office Word-processing, Spreadsheets, Presentations, Latex, Beamer, Tikz

Algebraic computing Singular, Scilab, Maple, MATLAB

Programming C++

Hobbies

Sport Swimming, Scuba diving, Running, Mountaineering

Sciences Astronomy, Astrophysics

Psychology Behaviorism, Psychoanalysis

Teaching activities

2016–2017 **Master thesis supervision**, *Bremen University*, Title: Freeness, Multifreeness and Extendability of Arrangements of Hyperplanes.

2011–2014 **Teaching assistant**, *Université de Nice - Sophia Antipolis*.

Linear algebra: 1st/2nd year Mathematics - Informatic *Tutoring*

Mathematics for Biology: 1st year Biology *Tutoring, Lecturer*

Mathematics for Economics: 1st year *Tutoring, Thesis supervision*

Vocational training:

- Create a course
- Body and Voice

- How to stimulate students' commitment
- Interactive exercices for students
- Educational activities for students

2013 **Science popularization**, *Fête de la science*, Université de Nice - Sophia Antipolis.

2007– 2010 **Tutoring in Mathematics, Physics, Chemistry**, *Agency: Complétude, Nice*.

Research activities

Publications and preprints

2017 **A vanishing result for the first twisted cohomology of affine varieties and applications to line arrangements**, *arXiv: 1705.06022*, (submitted), with A. Dimca and M. Yoshinaga.

2017 **On two pencils of cubic curves**, *arXiv: 1606.04858*, (submitted).

2016 **Homology graph of real arrangements and monodromy of Milnor Fiber**, *Advances in Applied Mathematics, volume 20, 46-85*, with S. Settepanella.

2016 **Vanishing results for the Aomoto complex of real hyperplane arrangements via minimality**, *Journal of Singularities, volume 14, 74-90*, with M. Yoshinaga.

2015 **Degeneration of Orlik-Solomon algebras and Milnor fibers of complex line arrangements**, *Geometriae Dedicata, volume 175, 49-56*, with M. Yoshinaga.

2014 **On the Monodromy of Milnor Fibers of Hyperplane Arrangements**, *Canadian Mathematical Bulletin, 2014-032-4*.

Participation in international conferences

Jul. 2017 **Advances in Arrangement Theory**, *Mathematical Congress of the Americas*, Montreal, Canada.

Jun. 2017 **Arrangements and beyond**, *CRM Ennio de Giorgi*, Pisa, Italy.

Apr. 2017 **Combinatorics of Arrangements of Hyperplanes**, *Leibniz Universität*, Hannover, Germany.

Oct. 2016 **Combinatorial Structures in Algebra, Geometry and Topology**, *Bremen*, Germany.

Sept. 2016 **PISA-HOKKAIDO Summer School on mathematics and its applications**, *Centro De Giorgi*, Pisa, Italy.

Jun. 2016 **Topology and Geometry of arrangements**, *Fribourg*, Switzerland.

Mar. 2016 **Special Session on Topology and Combinatorics of Arrangements**, *Stony Brook University*, New York, USA.

Mar. 2016 **Singularities and topology**, *Nice*, France.

Feb. 2015 **Arrangements: topology, combinatorics and stability**, *Pisa*, Italy.

Jul. 2015 **ICERM workshop "Computational Geometric Topology in Arrangement Theory"**, *Brown University*, USA.

Mar. 2015 **Arrangements of plane curves and related problems**, *Tokyo Metropolitan University*, Japan.

Sept. 2014 **Geometry and Combinatorics of hyperplane arrangements and related problems**, *Hokkaido University*, Sapporo, Japan.

Aug. 2014 **Second symposium France-Japon-Vietnam on singularities**, *Hokkaido University*, Sapporo, Japan.

Feb. 2014 **Winter Braids IV**, *Dijon*, France.

Research stays

Dec. 2016 **Linköping University**, *Sweden*.

Feb. 2016 **Pisa**, *Italy*.

Scientific community services

Reviewer for the Journal "Evolutionary and Institutional Economics Review" (EIER).

June 2014 **Co-organizer of the Ph.D. seminar of the Mathematic and Interactions Department of Université de Nice - Sophia Antipolis (ADSFA)**, *Frejus*, France.

2011–2013 **Treasurer of the ADSFA**.