Roser Homs Pons

contact

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professional experience

Oct 20 -	**Technische Universität München**	München
	Postdoctoral researcher	
	Mentor: Prof. Mathias Drton.	
Jan 20-Sep 20	**Max-Planck-Institut für Mathematik in den Naturwissenschaften**	Leipzig
	Postdoctoral researcher	
	Mentor: Prof. Bernd Sturmfels.	
Aug 19-Dec 19	**Technische Universität Berlin**	Berlin
	Postdoctoral fellow	
	Mentors: Prof. Michael Joswig and Prof. Bernd Sturmfels.	
May 15-Apr 19	**Universitat de Barcelona**	Barcelona
	Predoctoral researcher	
Jan 13-Apr 15	**Infor**	Barcelona
	Consultant	
	ERP consultant, focused on Production and Planning and Data Warehousing tools.	
Sep 14-Mar 15	**Universitat Pompeu Fabra**	Barcelona
	Part-time lecturer	
Sep 10-Aug 11	**Universitat Politècnica de Catalunya**	Castelldefels
	Part-time lecturer	

education

2019	**Ph.D.** in Mathematics	Universitat de Barcelona (UB)
	Gorenstein colength of Artin local k-algebras	
	Advisor: Prof. Joan Elias.	
2017	**Master** in Teaching in Secondary School	UB-UAB-UOC-UPC-UPF
	Specialization in Mathematics.	
2012	**Master** in Professional and Advanced Mathematics	UB
	Master thesis: *On the classification of Artinian algebras*	
	Advisor: Prof. Joan Elias.	
2010	**Degree** in Mathematics	UB

research stays

9.18-12.18	**Università degli Studi di Genova**	Genova, Italy
	Host: Prof. Maria Evelina Rossi.	
9.17-12.17	**INRIA Sophia Antipolis - Meditérranée**	Sophia Antipolis, France
	Host: Prof. Bernard Mourrain.	
4.16-6.16	**Universität Osnabrück**	Osnabrück, Germany
	Host: Prof. Tim Römer.	

publications and preprints

Bounds on complexity of matrix multiplication away from CW tensors, with Joachim Jelisiejew, Mateusz Michałek and Tim Seynnaeve, arXiv:2103.12598.

Computing Maximum Likelihood Estimates for Gaussian Graphical Models with Macaulay2, with Carlos Améndola, Luis David García-Puente, Olga Kuznetsova and Harshit J. Motwani, arXiv:2012.11572.

Canonical Hilbert-Burch matrices for power series, with Anna-Lena Winz, arXiv:2004.04776.

Primary ideals and their differential equations, with Yairon Cid-Ruiz and Bernd Sturmfels, to appear in Foundations of Computational Mathematics, arXiv:2001.04700.

Computing minimal Gorenstein covers, with Juan Elias and Bernard Mourrain, J. Pure Appl. Algebra 224 (2020), arXiv:1901.04165.

On low Gorenstein colength, with Juan Elias, J. Algebra 513 (2018), 368-387.

On the analytic type of Artin algebras, with Juan Elias, Comm. Algebra 44.6 (2016), 2277-2304.

scholarships

2016-2018	**Estancias breves**	Ministerio de Economía y Competitividad, Spanish Government

Financial support for short research stays at Universität Osnabrück (2016), INRIA Sophia Antipolis (2017) and Università degli studi di Genova (2018).

2015-2019	**Predoctoral fellowship**	Ministerio de Economía y Competitividad, Spanish Government

Financial support for predoctoral contracts for the training of doctors (FPI 2014).

2006-2010	**Excellence programme**	Facultat de Matemàtiques, Universitat de Barcelona

Full tuition support for the Degree in Mathematics.

teaching

2020-2021	**Tecnische Universität München**	Fakultät für Mathematik

Teaching assistant of:
Graphical Models in Statistics.
Seminar in Expectation-Maximization (EM) algorithm.

2015-2019	**Universitat de Barcelona**	Facultat de Matemàtiques

Teaching assistant of:
Degree in Mathematics: Matrices and Vectors, Linear Geometry, Algebraic structures and Introduction to commutative algebra.
Degree in Chemical Engineering: Linear Algebra.
Degree in Computer Engineering: Algebra.

2014-2015	**Universitat Pompeu Fabra**	Facultat de Ciències Econòmiques i Empresarials

Teaching assistant of Mathematics I and II, Degree in Business Management.

2011	**Proves d'accés a la Universitat**	Departament d'Ensenyament, Catalan Government

Proofreader of the Mathematics admission test for Catalan universities.

2010-2011	**Universitat Politècnica de Catalunya**	Escola d'Enginyeria de Telecomunicació i Aeroespacial

Instructor of Calculus, Degree in Telecommunications.

talks

Inverting catalecticants of ternary quartics, *Seminari de Geometria Algebraica de Barcelona.* Universitat de Barcelona. Feb 12, 2021.

Primary ideals and their differential equations, *Seminario di algebra e geometria del DMG.* Università degli studi di Trieste. Dec 4, 2020.

Primary ideals and their differential equations, *BYMAT 2020.* Universitat de València. Dec 2, 2020.

Primary ideals and their differential equations, *Nonlinear Algebra Seminar Online.* Recording. Apr 2, 2020.

Canonical Hilbert-Burch matrices in $k[\![x,y]\!]$, *Milestone Conference of the Thematic Einstein Semester on Algebraic Geometry.* Zuze Institüt Berlin. Feb 27, 2020.

Computing minimal Gorenstein covers, *Seminar Algebraische Geometrie.* FU Berlin. Feb 13, 2020.

Understanding primary ideals, *PhD Students and Postdocs Seminars of the Thematic Einstein Semester on Algebraic Geometry.* Freie Universität Berlin. Dec 6, 2019.

Hilbert-Burch matrices of ideals in $k[x,y]$ and $k[\![x,y]\!]$, *Forschungsseminar Diskrete Mathematik/Geometrie.* Technische Universität Berlin. Nov 11, 2019.

Computing minimal Gorenstein covers, *Summer Seminar.* MiS MPI Leipzig. Sep 5, 2019.

Computing minimal Gorenstein covers , *MEGA 2019 (Effective Methods in Algebraic Geometry).* Universidad Complutense de Madrid. Jun 17, 2019.

Computing minimal Gorenstein covers of Artin local rings of low Gorenstein colength, *XVI EACA (Encuentro de álgebra computacional y aplicaciones).* Universidad de Zaragoza. Jul 6, 2018.

Computing Gorenstein colength of Artin rings, *Seminari de Geometria Algebraica de Barcelona.* Universitat de Barcelona. Apr 27, 2018.

How far is an Artin ring from being Gorenstein?, *Berlin Mathematical Society – BGSMath Junior Meeting.* Institut d'Estudis Catalans, Barcelona. Oct 9, 2017.

How far is an Artin ring from being Gorenstein?, *AROMATH Seminar.* INRIA–Sophia Antipolis. Nov 8, 2017.

On low Gorenstein colength of Artin local rings, *Meeting of the Catalan, Spanish and Swedish Mathematical Societies.* Umea, Sweeden. Jun 14, 2017.

Something about Gorenstein rings and Gorenstein colength, *Seminari de Doctorands d'Àlgebra, Geometria i Aritmètica.* Universitat de Barcelona. May 10, 2017.

Gorenstein colength of Artin local rings, *Kollegenseminar*, , Universität Osnabrück. May 31, 2016.

organizational activities

Parallel Session on Commutative Algebra and Applications, V Congreso de Jóvenes Investigadores de la Real Sociedad Matemática Española, co-organized with Ignacio García-Marco and Beatriz Pascual-Escudero. Universitat Jaume I, Castelló 27/01/20-31/01/20.

scientific outreach

STEM amb tu. Initiative from the Association of Women Researchers and Technologists in Catalonia (AMIT-CAT) to promote STEM among girls through talks in Catalan high schools. November-December 2018.

Matefest 2018. Conference entitled *Maths in Music*. Facultat de Matemàtiques, Universitat de Barcelona. April 18, 2018.

Matemàtiques com tu - International Day of Women and Girls in Science. Conference entitled *Music also counts*. Institut d'Estudis Catalans, Barcelona. February 9, 2018.