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EDUCATION

- PhD Mathematics, Universidad Autónoma de Madrid** *Defense december 2013*
Higgs bundles, real forms and the Hitchin fibration.
Advisors: O. García-Prada et Luis Álvarez-Cónsul.
Funded by a scholarship FPU, Ministerio de Educación.
- PhD Mathematics, Université Paris 7 Denis-Diderot** *2007/09*
Scientific reorientation: October 2009.
Théorie des modèles et applications à l'algèbre différentielle et aux différences.
Advisor: Zoé Chatzidakis.
Funded by a scholarship Allocation de recherche, Ministère de l'Éducation.
- Master M2 Mathématiques fondamentales, Université Paris 7 Denis-Diderot** *2006/07*
Théorie des modèles et géométrie réelle.
Advisor: Max Dickmann.
Funded by a scholarship Fundación Caixa Galicia.
- Licenciatura en Matemáticas (MSc) Universidad Autónoma de Madrid** *2002/06*

WORK EXPERIENCE

- Postdoctoral researcher. Universität Heidelberg** *October 2013 - Present*
TA, Universidad Autónoma de Madrid *2011/13*
Monitrice (TA). Université Paris 7 *2007/09*

RESEARCH INTERESTS

Algebraic and differential geometry. Moduli spaces and stacks of Higgs bundles. The Hitchin map. Relations to physics, representation varieties and geometric structures.

PUBLICATIONS AND PREPRINTS

On $\sigma\delta$ Picard–Vessiot extensions

Communications in Algebra 34, 4 (2011), 1242–1249.

Higgs bundles, real forms and the Hitchin fibration

PhD Thesis. Universidad Autónoma de Madrid, 2013.

Higgs bundles and the Hitchin–Kostant–Rallis section *(with O. García-Prada and S. Ramanan).*

Preprint www.mathi.uni-heidelberg.de/~apeonnieto. 80pp. 2014

Cameral data for $SU(p, p + 1)$ -Higgs bundles

Preprint <http://arxiv.org/abs/1506.01318>. 24pp. 2015

Papers in preparation:

- Higgs bundles, real forms and gerbes *(with O. García-Prada)*. In preparation.

Notes:

- “Algebraic geometry for Physicists”.

Master/PhD course, Physics. Universität Heidelberg.

Available on www.mathi.uni-heidelberg.de/~apeonnieto/.

- “Fiber bundles” and “Fiber bundles and gauge theories”.

Graduate courses. Universidad Complutense.

Two chapters of each, available on-demand.
 -“An extension of the Lindemann–Weierstrass theorem”
 Advanced course, École Modnet.
 Available on www.logique.jussieu.fr/~point/notesmodnet.html.

INVITED CONFERENCES

- Higgs bundles and the Hitchin system** *January 2016*
TBA. CIB, EPFL, Switzerland.
- Fifty Years of the Narasimhan-Seshadri Theorem** *October 2015*
TBA. Chennai Mathematical Institute, India.
- Current trends on spectral data for Higgs bundles** *September 2015*
TBA. AIM, San Jose, California.
- 2015 Joint International Meeting with the AMS, the EMS, and the SPM.** *June 2015*
Special session on Higgs bundles and character varieties.
Quasi-split real groups and the Hitchin map. Universidade do Porto, Portugal.
- Geometric structures and representation varieties** *November 2014*
Mini-course “Connected components of representation varieties”. KIAS, Seoul.
- Geometry and Physics of Moduli Spaces** *June 2014*
Higgs bundles and abelianization. ICMAT-UAM-UCM-UC3M, Madrid.
- Hitchin Lab Retreat, Madrid** *March 2013*
The Hitchin fibration and real forms through cameral covers. ICMAT-UAM-UCM-UC3M, Madrid.

INVITED SEMINARS

- Institut de recherche mathématique, Université de Rennes** *Septembre 2015*
Séminaire de géométrie algébrique-TBA
- Laboratoire Paul Painlevé, Université de Lille** *April 2015*
Séminaire de géométrie algébrique-Fibrés de Higgs, groupes réels et le système de Hitchin.
- Laboratoire d’Analyse, topologie et probabilités, Université d’Aix Marseille** *March 2015*
Séminaire de géométrie, dynamique et topologie-Fibrés de Higgs, groupes réels et le système de Hitchin.
- Laboratoire J.A. Dieudonné, Université de Nice** *March 2015*
Séminaire de algèbre, topologie et géométrie-Fibrés de Higgs, groupes réels et le système de Hitchin.
- Séminaire GT3, UFR Mathématiques, Université de Strasbourg** *November 2014*
Fibrés de Higgs, groupes réels et la section de Hitchin–Kostant–Rallis.
- Center for symmetry and representations, University of Copenhagen** *April 2014*
Abelianization of Higgs bundles.
- Seminario del Departamento de Geometría y Topología. UCM** *December 2013*
Fibrados de Higgs, formas reales y gavillas.
- Seminario del Departamento de Matemáticas. UAM** *December 2013*
Fibrados de Higgs, formas reales y la aplicación de Hitchin
- Hauptseminar Geometrie. Universität Heidelberg** *July 2013*
Higgs bundles, real forms and cameral covers.
- Math/Physics seminar, UPenn, Philadelphia** *February 2013*
Higgs bundles, real forms and cameral covers.

OTHER SEMINARS AND ACTIVITIES.

- Workshop New perspectives on spectral data for Higgs bundles** *September 2015*
 AIM San Jose, California.
- Workshop Differentialgeometrie im Großen** *June 2015*
 Mathematisches Forschungsinstitut Oberwolfach, Germany.
- Workshop “Second Junior Gear Retreat, University of Michigan in Ann Arbor** *May 2014*
Higgs bundles and abelianization. Contributed talk.

“What is...?” Seminar, Universität Heidelberg. <i>What is a boson/fermion?</i> Junior Seminar	May 2014
Gear Retreat, University of Maryland <i>Presentation of the poster: “Abelianization of Higgs bundles”.</i>	March 2014
“What is...?” Seminar, Universität Heidelberg <i>What is a gerbe?</i> Junior Seminar	January 2014
Toric seminar, UPenn, Philadelphia <i>Mirror symmetry and toric geometry.</i>	May 2012
Pizza seminar, UPenn, Philadelphia. <i>GIT: the quest for \mathbb{P}^n.</i> Junior Seminar	April 2012
Séminaire des thésards de géométrie. Université Paris 7. <i>Théorie des modèles et applications à l’algèbre.</i> Junior Seminar	June 2009
Séminaire des thésards de logique. Université Paris 7. <i>Variétés algébriques vs. variétés analytiques.</i> Junior Seminar	May 2009

PARTICIPATION IN RESEARCH PROJECTS

Ministerio de Ciencia e Innovación, Spain (project MTM2010-17717)	2010/13
Ministerio de Ciencia e Innovación, Spain (project MTM2007-67623).	2007/10

RESEARCH STAYS ABROAD

IMS, University of Singapore.	July/August 2013
UPenn, Philadelphia.	August 2013
UPenn, Philadelphia.	January-March 2013.
UPenn, Philadelphia.	July 2012.
UPenn, Philadelphia..	January-May 2012.
Isaac Newton Institute, Cambridge.	January-March 2011.

TEACHING

Seminar “Lie algebras and representations” <i>Mathematisches Institut, Ruprecht–Karls Universität Heidelberg</i> Bsc/Msc Mathematics/Physics. 60h.	1st semester 2014
Minicourse “Algebraic Geometry for Physicists” <i>As part of the “Physics Graduate Days, Ruprecht–Karls Universität Heidelberg.</i> Msc/PhD Physics. 15h.	October 2014
Problem classes “Matemáticas I”, <i>Departamento de Matemáticas, Universidad Autónoma de Madrid.</i> 1st year Chemical engineering. 30h/year.	2011/12, 12/13
Problem classes “Analyse et Algèbre de base” <i>Insitut de Mathématiques de Jussieu, Université Paris 7 Denis–Diderot.</i> 1st year Physics. 64h/year.	2007/08, 08/09

SERVICE AND ORGANISATION

Hauptseminar Geometrie, Universität Heidelberg	March 2015-present
Talk “Differentialgeometrie at MATCH, presentation at the HLF	September 2014
“What is...?” Seminar, Universität Heidelberg	January 2014-present
Conference “Higher Teichmüller theory: relations and new trends”	November 2015
International Mathematical Olympiad. Exam invigilator.	July 2008
International Congress of Mathematicians. Registration desk.	August 2006
Popular Math: Semana de la Ciencia 2011, Madrid; member of the group “Les Maths Magiques” (Université Paris 6-7, 2007/09); Semana de la ciencia 2003, Madrid	

HONORS AND AWARDS

Klaus-Georg und Sigrid Hengstberger Prize for Young Scientists 2014 Universität Heidelberg.
Participation at the Heidelberg Laureate Forum. Heidelberg, 20-26th September 2014.
Postdoctoral MATCH Scholarship. Universität Heidelberg, October 2013/October 2015
Master Scholarship Fundación Caixa Galicia. Université Paris 7. Année 2006/07.
Premio extraordinario de Licenciatura UAM (2006) to the best Msc diploma of the year in Mathematics. Universidad Autónoma de Madrid.
Other: Beca de collaboration UAM 2005 (development of computational exercises for the advanced course “Criptografía”); ERASMUS Scholarship 2004/05 (Imperial College, Londres).

LANGUAGES

Spanish (Mother tongue).
English (Fluent; TOEFL Computer based 2006. 277/300).
French (Fluent; DALF C1).
Italian (Fluent).
German (Intermediate).