



## Geometría y Topología

---

**Áreas de conocimiento:** Geometría y Topología

**Director:** Francisco Urbano Pérez-Aranda

**Secretario:** Miguel Ortega Titos

**Página web:** <http://geometry.ugr.es/>

**Profesorado:** CU: 15, PTU: 5, PTEU: 0, PDI Contratado 4 y Otros: 3.

### Tesis leídas

- Superficies con curvaturas prefijadas en  $M^2 \times R$  y superficies mínimas de Laguerre en  $R^3$

Doctorando: Victorino Lozano Cabrero

Director: Juan Ángel Aledo Sánchez y José Antonio Gálvez

Fecha de lectura: 1 de octubre de 2013

### Grupos de Investigación.

**FQM324** GEOMETRIA DIFERENCIAL Y SUS APLICACIONES

- Responsable: CEFERINO RUIZ GARRIDO

**FQM325** PROBLEMAS VARIACIONALES EN GEOMETRIA

- Responsable: FRANCISCO URBANO PÉREZ-ARANDA

### Dirección y participación en Proyectos I+D

- 2015 GEOMETRÍA SEMI-RIEMANNIANA Y PROBLEMAS VARIACIONALES EN FÍSICA MATEMÁTICA, OTROS PROGRAMAS DEL PLAN NACIONAL I+D, MINISTERIO DE CIENCIA Y TECNOLOGÍA, 01/01/2015-31/12/2017

Responsable SANCHEZ CAJA, MIGUEL

- 2014 Minimal and constant mean curvature surfaces in homogeneous 3-manifolds, Granada Excellence Network of Innovation Laboratories (GENIL), 01/04/2014-31/01/2015

Responsable RODRÍGUEZ PÉREZ, MARÍA MAGDALENA

- 2014 Equações em derivadas parciais geométricas, teoria global de superfícies e espaços com densidade, Programa Ciência Sêm Fronteiras, CNPq (Brasil), 03/02/2014-03/02/2017

Participante ALARCÓN LÓPEZ, ANTONIO

Responsable JIMÉNEZ GRANDE, MARÍA ASUNCIÓN

- 2014 Semi-Riemannian Geometry and Variational Problems in Mathematical Physics, , 01/01/2014-30/12/2016

Investigador/a SALAMANCA JURADO, JUAN JESÚS

Investigador/a CABALLERO CAMPOS, MAGDALENA

Investigador/a RUBIO RUIZ, RAFAEL MARÍA

Investigador/a BARROS DIAZ, MANUEL

Investigador/a ROMERO SARABIA, ALFONSO

Coordinador SANCHEZ CAJA, MIGUEL

Investigador/a ORTEGA TITOS, MIGUEL

- 2014 ESTUDIO DE INVARIANTES ASOCIADOS A ESTRUCTURAS TOPOLOGICAS Y DIFERENCIABLES MODULO DEFORMACION, Programa Estatal de Investigación Científica y Técnica de Excelencia, Subprograma Estatal de Generación de Conocimiento, modalidad 1, Proyectos de I+D., 01/01/2014-31/12/2016

Investigador/a GUTIERREZ LOPEZ, MANUEL

- 2014 Geometría global de superficies, Ministerio de Economía y Competitividad, 01/01/2014-30/12/2016

Investigador/a MILÁN LÓPEZ, FRANCISCO

### Publicaciones en revistas

- 2015 Artículo: On complete constant mean curvature vertical multigraphs in  $E(\xi, \xi)$ , Journal of Geometric Analysis, 25, 1, 336-346

MANZANO PREGO, JOSÉ MIGUEL

RODRÍGUEZ PÉREZ, MARÍA MAGDALENA

- 2015 Artículo: Ribaucour type transformations for the Hessian one equation, Nonlinear Analysis, 112, , 147-155

MILÁN LÓPEZ, FRANCISCO

- 2015 Artículo: Massless particles in generalized Robertson-Walker 4-spacetimes, Annali di matematica pura ed applicata, 194, , 259-273

CAÑADAS PINEDO, MARIA ANGUSTIAS

GUTIERREZ LOPEZ, MANUEL

ORTEGA TITOS, MIGUEL

- 2015 Artículo: A Fundamental Theorem for Hypersurfaces in Semi-Riemannian Warped Products, Journal of Geometry and Physics, 90, , 55-70



- ORTEGA TITOS, MIGUEL
- 2015 Artículo: Real hypersurfaces in complex two-plane Grassmannians whose shape operator is recurrent for the generalized Tanaka-Webster connection, *TURK J MATH*, 39, 3, 313-321
  - PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2015 Artículo: Hopf hypersurfaces in complex two-plane Grassmannians with generalized Tanaka-Webster parallel normal Jacobi operator, *Czechoslovak Mathematical Journal (Prague, Print)*, PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2015 Artículo: Commuting structure Jacobi operator for real hypersurfaces in complex two-plane Grassmannians, *ACTA MATHEMATICA SINICA English Series*, 31, 1, 111-122
  - PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2015 Artículo: Approximation theory for non-orientable minimal surfaces and applications, *Geometry and Topology*, 19, 2, 1015-1062
  - ALARCÓN LÓPEZ, ANTONIO
  - LOPEZ FERNANDEZ, FRANCISCO JOSE
  - 2015 Artículo en prensa: The Calabi-Yau problem, null curves, and Bryant surfaces, *Mathematische Annalen*, , , -
  - ALARCÓN LÓPEZ, ANTONIO
  - 2015 Artículo en prensa: Capillary surfaces inside polyhedral regions, *Calculus of variations and partial differential equations*, , , -
  - ALARCÓN LÓPEZ, ANTONIO
  - 2014 Artículo: Simply-connected minimal surfaces with finite total curvature in  $H^2 \times R$ , *International Mathematics Research Notices*, 2014, 11, 2955-2971
  - RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Artículo: Compact stable hypersurfaces with free boundary in convex solid cones with homogeneous densities, *Calculus of variations and partial differential equations*, Aceptado, , -
  - CAÑETE MARTIN, ANTONIO JESÚS
  - ROSALES LOMBARDO, MANUEL CÉSAR
  - 2014 Artículo: The Cauchy problem for indefinite improper affine spheres and their Hessian equation, *Advances in mathematics (New York. 1965)*, 251, , 22-34
  - MILÁN LÓPEZ, FRANCISCO
  - 2014 Artículo: Null curves and directed immersions of open Riemann surfaces, *Inventiones mathematicae*, 196, 3, 733-771
  - ALARCÓN LÓPEZ, ANTONIO
  - 2014 Artículo: Minimal surfaces with positive genus and finite total curvature in  $H^2 \times R$ , *Geometry & Topology*, 18, 1, 141-177
  - MARTIN SERRANO, FRANCISCO
  - RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Artículo: On the generalized Weyl problem for flat metrics in the hyperbolic 3-space., *Journal of Mathematical Analysis and Applications*, 410, , 144-150
  - GÁLVEZ LÓPEZ, JOSÉ ANTONIO
  - MARTINEZ LOPEZ, ANTONIO
  - 2014 Artículo: Equivariant Willmore surfaces in conformal homogeneous three spaces, *Journal of Mathematical Analysis and Applications*, 409, , 459-477
  - BARROS DIAZ, MANUEL
  - 2014 Artículo: On the energy density of helical proteins, *Journal of Mathematical Biology*, , , -
  - BARROS DIAZ, MANUEL
  - 2014 Artículo: Real hypersurfaces of Codazzi type in complex two-plane Grassmannians, *Bulletin of the Malaysian Mathematical Sciences Society*, 37, 1, 123-128
  - PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2014 Artículo: A characterization of certain geodesic hyperspheres in complex projective space, *TURK J MATH*, 38, 1, 139-153
  - PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2014 Artículo: Ribaucour Transformations for Flat Surfaces in the Hyperbolic 3-space, *Journal of Mathematical Analysis and Applications*, 412, 2, 720-743
  - MARTINEZ LOPEZ, ANTONIO
  - 2014 Artículo: Upper and lower bounds for the volume of a compact spacelike hypersurface in a Generalized Robertson-Walker spacetime, *International Journal of Geometric Methods in Modern Physics*, 11, 1, 1-10
  - ALEDO SANCHEZ, JUAN ANGEL
  - ROMERO SARABIA, ALFONSO
  - RUBIO RUIZ, RAFAEL MARÍA
  - 2014 Artículo: The Friedmann cosmological models revisited as an harmonic motion and new exact solutions, *International Journal of Geometric Methods in Modern Physics*, , , -
  - RUBIO RUIZ, RAFAEL MARÍA
  - SALAMANCA JURADO, JUAN JESÚS



- 2014 Artículo: SPACELIKE GRAPHS OF FINITE TOTAL CURVATURE IN CERTAIN 3-DIMENSIONAL GENERALIZED ROBERTSON-WALKER SPACETIME, Reports on Mathematical Physics, 73, 2, 241-254  
RUBIO RUIZ, RAFAEL MARÍA
- 2014 Artículo: Constant mean curvature spacelike hypersurfaces in Lorentzian warped products and Calabi-Bernstein type problems, Journal Nonlinear Analysis, 106, , -  
RUBIO RUIZ, RAFAEL MARÍA
- 2014 Artículo: Periodic constant mean curvature surfaces in  $H^2 \times \mathbb{R}$ , The Asian journal of mathematics, 18, 5, 829-858  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
- 2014 Artículo en prensa: Non-proper complete minimal surfaces embedded in  $H^2 \times \mathbb{R}$ , International Mathematics Research Notices, , , -  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
- 2014 Artículo: Flat fronts in hyperbolic 3-space with prescribed singularities, Annals of Global Analysis and Geometry, 46, 3, 227-239  
MILÁN LÓPEZ, FRANCISCO
- 2014 Artículo: Harmonic diffeomorphisms between domains in the Euclidean 2-sphere, Commentarii mathematici Helvetici (Printed ed.), 89, 1, 255-271  
ALARCÓN LÓPEZ, ANTONIO
- 2014 Artículo: Properness of associated minimal surfaces, Transactions of the American Mathematical Society, 366, 10, 5139-5154  
ALARCÓN LÓPEZ, ANTONIO  
LOPEZ FERNANDEZ, FRANCISCO JOSE
- 2014 Artículo en prensa: Complete bounded embedded complex curves in  $C^2$ , Journal of the European Mathematical Society (Print), , , -  
ALARCÓN LÓPEZ, ANTONIO  
LOPEZ FERNANDEZ, FRANCISCO JOSE
- 2014 Artículo: SPACELIKE GRAPHS OF FINITE TOTAL CURVATURE IN CERTAIN 3-DIMENSIONAL GENERALIZED ROBERTSON-WALKER SPACETIMES, Reports on mathematical physics, 73, 2, 241-254  
SALAMANCA JURADO, JUAN JESÚS
- 2014 Artículo: PROPERLY EMBEDDED MINIMAL PLANAR DOMAINS, ANNALS OF MATHEMATICS, 181, 3, -  
PÉREZ MUÑOZ, JOAQUIN
- 2014 Artículo: D-parallelism of normal and structure Jacobi operators for hypersurfaces in complex two-plane Grassmannians, Annali di matematica pura ed applicata, 193, 2, 591-608  
PÉREZ JIMÉNEZ, JUAN DE DIOS
- 2014 Artículo: A construction of a complete bounded null curve in  $C^3$ , KODAI MATH J, 37, 1, 59-96  
FERRER MARTÍNEZ, LEONOR  
MARTIN SERRANO, FRANCISCO
- 2014 Artículo: On the definition and examples of Finsler metrics, Annali della Scuola normale superiore di Pisa. Classe di scienze (Testo stampato), XXIII, , 813-858  
SANCHEZ CAJA, MIGUEL
- 2014 Artículo: PROPERLY EMBEDDED, AREA-MINIMIZING SURFACES IN HYPERBOLIC 3-SPACE, JOURNAL OF DIFFERENTIAL GEOMETRY, 97, 3, 515-544  
MARTIN SERRANO, FRANCISCO
- 2014 Artículo: Uniqueness of  $\phi$ -minimal hypersurfaces in warped product manifolds, Journal of Mathematical Analysis and Applications, , , -  
SALAMANCA JURADO, JUAN JESÚS
- 2014 Artículo: Complete maximal hypersurfaces in certain spatially open generalized Robertson-Walker spacetimes, Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A, Matemáticas (Ed. impresa), , , -  
ROMERO SARABIA, ALFONSO  
RUBIO RUIZ, RAFAEL MARÍA  
SALAMANCA JURADO, JUAN JESÚS
- 2014 Artículo: Componentwise Conformal Vector Fields on Riemannian Almost Product Manifolds, Balkan journal of geometry and its applications, 19, 1, 88-99  
ORTEGA TITOS, MIGUEL  
PALOMO RUIZ, FRANCISCO JOSÉ  
ROMERO SARABIA, ALFONSO
- 2014 Artículo: COMPLETE CONSTANT MEAN CURVATURE SPACELIKE HYPERSURFACES IN THE EINSTEIN-DE SITTER SPACETIME, Reports on mathematical physics, 74, 1, 127-133  
RUBIO RUIZ, RAFAEL MARÍA
- 2014 Artículo: A new approach for uniqueness of complete maximal hypersurfaces in spatially parabolic GRW spacetimes, Journal of mathematical analysis and applications, 419, 1, 355-372  
RUBIO RUIZ, RAFAEL MARÍA
- 2014 Artículo: Convexity of the solutions to the constant mean curvature spacelike surface equation in



- the Lorentz-Minkowski space, Journal of differential equations (Print), , , -  
ALBUJER BROTONS, ALMA LUISA  
CABALLERO CAMPOS, MAGDALENA  
LOPEZ CAMINO, RAFAEL
- 2014 Artículo: Calabi-Bernstein type problems for some nonlinear equations arising in Lorentzian Geometry, Thematic Reviews of the Institute Information of the Russian Academy of Sciences, 127, , 48-58  
CABALLERO CAMPOS, MAGDALENA  
ROMERO SARABIA, ALFONSO  
RUBIO RUIZ, RAFAEL MARÍA
  - 2014 Artículo: Canonical variation of a Lorentzian metric, J. Mathematical Analysis and Applications, 419, , 156-171  
OLEA ANDRADES, BENJAMÍN
  - 2014 Artículo: Chern connection of a pseudo-Finsler metric as a family of affine connections., Publicaciones Mathematicae Debrecen, 84, 1-2, 29-43  
JALOYOS VICTORIA, MIGUEL ANGEL
  - 2014 Artículo: Lie and generalized Tanaka-Webster derivatives on real hypersurfaces in complex projective spaces, International journal of mathematics, 25, 12, 1450115-13  
PÉREZ JIMÉNEZ, JUAN DE DIOS

#### Libros (con ISBN)

- 2014 Geometría II. De la diagonalización a las isometrías: Godel Impresiones Digitales SL, Granada, España, 2014, 978-84-15873-33-4  
SÁNCHEZ RODRÍGUEZ, IGNACIO

#### Capítulos de libros (con ISBN)

- 2014 Título Capítulo: Some Geometric Aspects of the Hessian One Equation, Título Libro: Real and Complex Submanifolds: Springer Proceedings in Mathematics & Statistics, , 2014, 978-4-431-55214-MILÁN LÓPEZ, FRANCISCO
- 2014 Título Capítulo: Cho operators on real hypersurfaces in complex projective space, Título Libro: Real and Complex Submanifolds: Springer Proceedings in Mathematics & Statistics, , 2014, 978-4-431-55214-7  
PÉREZ JIMÉNEZ, JUAN DE DIOS

#### Contribuciones en congresos

- 2015 Comunicación en Seminario: Minimal surfaces in  $H^2 \times \mathbb{R}$ , Differential Geometry & Geometric Analysis Seminar, 20/01/2015, PRINCETON, EE.UU, Seminario  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
- 2015 Ponencia en Congreso: Complete minimal surfaces bounded by Jordan curves, Norwegian-Spanish Workshop in Complex Variables and Applications, 19/02/2015, , Congreso  
ALARCÓN LÓPEZ, ANTONIO
- 2015 Ponencia en Congreso: The conformal Calabi-Yau problem, V Workshop de Geometria Diferencial, 16/03/2015, MACEIO, BRASIL, Congreso  
ALARCÓN LÓPEZ, ANTONIO
- 2014 Poster en Congreso: A Fundamental Theorem for Hypersurfaces in Semi-Riemannian Warped Products, The second Japanese-Spanish workshop on Differential Geometry, 05/02/2014, TOKYO - JAPAN, Congreso  
ORTEGA TITOS, MIGUEL
- 2014 Ponencia en Congreso: Minimal surfaces in  $H^2 \times \mathbb{R}$  asymptotic to polygons at infinity, The second Japanese-Spanish workshop on Differential Geometry, 05/02/2014, , Congreso  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
- 2014 Ponencia en Congreso: A Riemann-Hilbert problem for holomorphic null curves in  $\mathbb{C}^3$ , 2nd Japanese-Spanish workshop on Differential Geometry, 05/02/2014, TOKIO, JAPÓN, Congreso  
ALARCÓN LÓPEZ, ANTONIO
- 2014 Comunicación en congreso: WEAK CMC FOLIATIONS WITH SINGULARITIES OF  $\mathbb{R}^3$ , SECOND JAPANESE-SPANISH WORKSHOP OF DIFFERENTIAL GEOMETRY, 05/02/2014, TOKIO (JAPON), Congreso  
PÉREZ MUÑOZ, JOAQUIN
- 2014 Comunicación en congreso: FOLIATIONS WITH LEAVES OF CONSTANT MEAN CURVATURE, IV WORKSHOP DE GEOMETRIA DIFERENCIAL, 10/03/2014, MACEIO, BRASIL, Congreso  
PÉREZ MUÑOZ, JOAQUIN
- 2014 Conferencias impartidas: CMC FOLIATIONS OF CLOSED MANIFOLDS, WARWICK-IMPERIAL-CAMBRIDGE GEOMETRIC ANALYSIS SEMINAR, 19/03/2014, CAMBRIDGE, INGLATERRA, Congreso  
PÉREZ MUÑOZ, JOAQUIN
- 2014 Comunicación en Seminario: CMC foliations of closed manifolds, Warwick-Imperial-Cambridge



- Geometric Analysis Seminar, 18/03/2014, . CAMBRIDGE, REINO UNIDO, Seminario  
PÉREZ MUÑOZ, JOAQUIN
- 2014 Ponencia en Congreso: Null curves and the Riemann-Hilbert problem, Geometric Analysis in Roscoff, 16/06/2014, Roscoff, Brest, France, Congreso  
ALARCÓN LÓPEZ, ANTONIO
  - 2014 Poster en Congreso: Zero mean curvature hypersurfaces in warped product Lorentzian manifolds, XXIII International Fall Workshop on Geometry and Physics, 01/09/2014, Granada, Congreso  
SALAMANCA JURADO, JUAN JESÚS
  - 2014 Comunicación en congreso: On the Bolza problem, The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, 07/07/2014, Madrid, Congreso  
SANCHEZ CAJA, MIGUEL
  - 2014 Conferencias impartidas: Uniqueness of maximal hypersurfaces in GRW spacetimes - Applications to Calabi-Bernstein type problems, Universidad de Trento (Italia), 05/12/2014, , Congreso  
SALAMANCA JURADO, JUAN JESÚS
  - 2014 Poster en Congreso: Dual characterizations of the sphere and the hyperbolic plane, XXIII International Fall Workshop on Geometry and Physics, 01/09/2014, Granada, Congreso  
CABALLERO CAMPOS, MAGDALENA
  - 2014 Poster en Congreso: Constant mean curvature graphs on convex domains in the Lorentz-Minkowski space, 2nd Japanese-Spanish workshop on differential geometry, 05/02/2014, ,  
CABALLERO CAMPOS, MAGDALENA  
ALBUJER BROTONS, ALMA LUISA  
LOPEZ CAMINO, RAFAEL
  - 2014 Conferencia Congreso no publicada: Grafos espaciales de curvatura media constante sobre dominios convexos en el espacio de Lorentz-Minkowski, Tercer Encuentro Conjunto de la Real Sociedad Matemática Española y de la Sociedad Matemáticas Mexicana, 01/09/2014, Zacatecas, México, Congreso  
ALBUJER BROTONS, ALMA LUISA  
LOPEZ CAMINO, RAFAEL  
CABALLERO CAMPOS, MAGDALENA
  - 2014 Comunicación en congreso: Minimal annuli with finite total curvature in  $H^2 \times \mathbb{R}$ , Junio Warwick-Imperial-Cambridge Seminar on Geometric Analysis, 12/12/2014, Londres, Congreso  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Comunicación en congreso: Minimal surfaces, Yorkshire Durham Geometry Day, 29/10/2014, , Congreso  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Comunicación en congreso: Minimal surfaces in  $H^2 \times \mathbb{R}$  asymptotic to polygons at infinity, III Encuentro Conjunto RSME - SMM., 31/08/2014, Zacatecas, México., Congreso  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Comunicación en Seminario: Minimal surfaces with finite total curvature and related problems, Seminar of Mathematic, 04/11/2014, , Seminario  
RODRÍGUEZ PÉREZ, MARÍA MAGDALENA
  - 2014 Comunicación en congreso: Generalized Tanaka-Webster connections on real hypersurfaces of some Kählerian manifolds, Seoul ICM 2014 International Congress of Mathematicians, 13/08/2014, Seoul, SEUL, SOUTH KOREA, Congreso  
PÉREZ JIMÉNEZ, JUAN DE DIOS
  - 2014 Ponencia en Congreso: New examples of capillary surfaces in polyhedral regions, XXIII International Fall Workshop on Geometry and Physics, 01/09/2014, Granada, Congreso  
ALARCÓN LÓPEZ, ANTONIO
  - 2014 Ponencia en Congreso: Capillary surfaces in polyhedral regions, 5th Iberian Mathematical Meeting, 03/09/2014, AVEIRO - PORTUGAL, Congreso  
ALARCÓN LÓPEZ, ANTONIO