INVESTIGACIÓN
GRUPOS DE INVESTIGACIÓN

OPTIMIZACIÓN VECTORIAL

CÓDIGO 64

OPTIMIZACIÓN VECTORIAL

CÓDIGO: 64

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PRESENTACIÓN

Presentación

El grupo básico de investigación de Optimización Vectorial empezó su actividad en 1996 y ha dedicado su trabajo al estudio de los Problemas de Optimización Vectorial y de Multifunciones. En este campo ha desarrollado ya los proyectos subvencionados consecutivos BFM2003-02194, MTM2006-02629, MTM2009-09493, MTM2012-30942, MTM2015-68103-P y PGC2018-096899-B-I00 (MCIU/AEI/FEDER, UE), PID2020-112491GB-I00 / AEI / 10.13039/501100011033, de los programas nacionales de I+D+i. En el primero se trataban los problemas de optimización vectorial y en los seis últimos se han estudiado también los problemas de optimización de multifunciones, y se han incluido líneas de investigación sobre desigualdades variacionales, problemas de equilibrio vectorial, y problemas de optimización con incertidumbre y de identificación de parámetros. La fecha final de ejecución de este ultimo proyecto es 31/08/2025.

La investigación del grupo continúa con el desarrollo del proyecto de título "Problemas de Optimización Vectorial y de Conjuntos con Modelos Aplicados", que contempla las líneas clásicas de trabajo del grupo sobre optimización vectorial y de conjuntos, e incluye el estudio de aplicaciones en modelado térmico de edificios, en modelos de optimización multiobjetivo orientados a tratamientos de radioterapia y en un modelo en Microeconomía que considera una representación multivaluada de la producción. Este proyecto ha sido propuesto para financiación en la convocatoria "Proyectos de Generación del Conocimiento 2024". La referencia del mismo es PID2024-156273NA-I00 (MICIU/AEI/10.13039/501100011033/ERDF, EU).

LINEAS DE INVESTIGACIÓN

- Optimization and Applications
- Mathematical Programming
- Multiobjective, Vector and Set-Valued Optimization
- Convex Analysis
- Generalized Convexity and Generalized Monotonicity
- Nonsmooth Analysis
- Generalized Derivatives
- Variational Inequalities
- Vector Equilibrium Problems
- AMS Subject Classification: 26B25, 46N10, 47N10, 49A52, 49J52, 49M37, 90C25, 90C26, 90C29, 90C30, 90C46

PROYECTOS

A) Realizados

•Optimización Vectorial

Entidad financiadora: Ministerio de Ciencia y Tecnología.
Proyecto I+D+i. Referencia: BFM2003-02194.
Ejecución: Del 01-11-2003 al 31-10-2006.
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED y Departamento de Matemática Aplicada de la Universidad de Valladolid.
Número de miembros del grupo: 5.

•Resolución Aproximada de Problemas de Optimización Vectorial

Entidad financiadora: Consejería de Educación de la Junta de Castilla y León.
Referencia: VA027B06.
Ejecución: Del 01-01-2006 al 31-12-2007.
Investigador principal: César Gutiérrez Vaquero.
Entidades participantes: Departamento de Matemática Aplicada de la Universidad de Valladolid y Departamento de Matemática Aplicada I de la UNED.
Número de miembros del grupo: 3.

•Optimización Vectorial y de Multifunciones

Entidad financiadora: Ministerio de Educación y Ciencia.
Proyecto I+D+i. Referencia: MTM2006-02629.
Ejecución: Del 01-10-2006 al 30-09-2009.
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED y Departamento de Matemática Aplicada de la Universidad de Valladolid.
Número de miembros del grupo: 5.

•i-Math-Consolider

Entidad financiadora: Ministerio de Educación y Ciencia.
Proyecto Consolider-Ingenio 2010.
Referencia: CSD2006-00032.
Ejecución: Del 01-09-2006 al 31-08-2011.
Investigador principal: Marco Antonio López Cerdá.
Entidades participantes: Practicamente todos los grupos de Investigación españoles con proyectos del Plan Nacional de Matemáticas.
Número de miembros del grupo: 1694 (los 7 de nuestro grupo).
Dentro del programa de actividad investigadora del proyecto, el grupo se integra en la avenida temática D.4: Optimización y técnicas de apoyo a la decisión.

•Optimización de Funciones Vectoriales y de Multifunciones
Entidad financiadora: Ministerio de Ciencia e Innovación.
Proyecto I+D+i. Referencia: MTM2009-09493
Ejecución: Del 01-01-2010 al 30-06-2013.
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Economia Politica e Metodi Quantitativi de la Università degli Studi di Pavia y Department of Economics de la Università degli Studi dell'Insubria Varese.
Número de miembros del grupo: 9.

•Optimización de Funciones Vectoriales y de Multifunciones
Entidad financiadora: Ministerio de Economía y Competitividad.
Proyecto I+D+i. Referencia: MTM2012-30942
Ejecución: Del 01-01-2013 al 31-07-2016.
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Scienze Economiche e Aziendali, Università di Pavia, y Dipartamento di Discipline matematiche, Finanza matematica ed Econometria, Università Cattolica del Sacro Cuore, Milano (Italy).
Número de miembros del grupo: 9.

•Problemas de optimización y equilibrio con funciones vectoriales y multifunciones
Entidades financiadoras: Ministerio de Economía y Competitividad y el Fondo Europeo de Desarrollo Regional (FEDER).
Proyecto I+D+i. Referencia: MTM2015-68103-P.
Ejecución: Del 01-01-2016 al 31-07-2019 (43 meses).
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Scienze Economiche e Aziendali, Università di Pavia, y Dipartimento di Discipline matematiche, Finanza matematica ed Econometria, Università Cattolica del Sacro Cuore, Milano (Italy) y Departamento de Matemática, Universidad de Tarapacá, Arica (Chile).
Número de miembros del grupo: 9.

•Problemas de optimización vectorial y de conjuntos
Entidades financiadoras: Ministerio de Ciencia, Innovación y Universidades (MCIU), Agencia Estatal de Investigación (AEI) y Fondo Europeo de Desarrollo Regional (FEDER)
Proyecto I+D+i. Referencia: PGC2018-096899-B-I00 (MCIU/AEI/FEDER, UE)
Ejecución: Del 01-01-2019 al 31-07-2021 (31 meses).
Investigador principal: Vicente Novo Sanjurjo.
Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Scienze Economiche e Aziendali, Università di Pavia, y Dipartimento di Discipline matematiche, Finanza matematica ed Econometria, Università Cattolica del Sacro Cuore, Milano (Italy) y Departamento de Matemática, Universidad de Tarapacá, Arica (Chile).

Número de miembros del grupo: 9.

•Incertidumbre y Optimización Vectorial con Aplicaciones en Problemas de Identificación de Parámetros

Entidades financiadoras: Ministerio de Ciencia e Innovación y Agencia Estatal de Investigación (AEI)

Proyecto I+D+i. Referencia: PID2020-112491GB-I00 / AEI / 10.13039/501100011033

Ejecución: Del 01-01-2021 al 31-08-2025.

Investigador principal: Miguel Ángel Sama Meige.

Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Scienze Economiche e Aziendali, Università di Pavia, y Dipartimento di Discipline matematiche, Finanza matematica ed Econometria, Università Cattolica del Sacro Cuore, Milano (Italy), Departamento de Matemática, Universidad de Tarapacá, Arica (Chile), Rochester Institute of Technology.

Número de miembros del grupo: 13.

B) En proceso de realización

• Problemas de Optimización Vectorial y de Conjuntos con Modelos Aplicados

Entidades financiadoras: Ministerio de Ciencia, Innovación y Universidades, Agencia Estatal de Investigación (AEI) y Fondo Europeo de Desarrollo Regional (FEDER, EU)

Proyecto I+D+i. Referencia: PID2024-156273-NAI00

Ejecución: Del 01-09-2025 al 31-08-2028.

Investigador principal: Lidia Huerga Pastor

Entidades participantes: Departamento de Matemática Aplicada I de la UNED, Departamento de Matemática Aplicada de la Universidad de Valladolid, Dipartimento di Scienze Economiche e Aziendali, Università di Pavia, y Dipartimento di Matematica per le Scienze Economiche, Finanziarie ed Attuariali, Università Cattolica del Sacro Cuore, Milano (Italy), Departamento de Matemática, Universidad de Tarapacá, Arica (Chile).

RESULTADOS

Trabajos de los miembros del grupo desde 2002 (ordenados por año):

A) Revistas clasificadas en el JCR de ISI

•Desde 2002 hasta 2006

•Desde 2007 hasta 2011

•Desde 2012 hasta 2016

•Desde 2017 hasta 2021

•Desde 2022 hasta la actualidad

B) Otras publicaciones

•Desde 2002 hasta 2006

•Desde 2007 hasta 2011

•Desde 2012 hasta 2016

•Desde 2017 hasta 2021

•Desde 2022 hasta la actualidad

A) Revistas clasificadas en el JCR de ISI

Desde 2002 hasta 2006

ADÁN, M., NOVO, V. (2002). Optimality conditions for vector optimization problems with generalized convexity in real linear spaces. Optimization 51, no. 1, 73-91.

JIMÉNEZ, B. (2002). Strict efficiency in vector optimization. J. Math. Anal. Appl. 265, no. 2, 264-284.

JIMÉNEZ, B., NOVO, V. (2002). A finite dimensional extension of Lyusternik theorem with applications to multiobjective optimization. J. Math. Anal. Appl. 270, no. 2, 340-356.

JIMÉNEZ, B., NOVO, V. (2002). Alternative theorems and necessary conditions for directionally differentiable multiobjective programs. J. Convex Anal. 9, no. 1, 97-116 .

JIMÉNEZ, B., NOVO, V. (2002). First and second order sufficient conditions for strict minimality in multiobjective programming. Numer. Funct. Anal. Optim. 23, no. 2&3, 303-322.

MIGLIERINA, E., MOLHO, E. (2002). Scalarization and stabitility in vector optimization. J. Optim. Theory Appl. 114, no. 3, 657-670.

ADÁN, M., NOVO, V. (2003). Efficient and weak efficient points in vector optimization with generalized cone convexity. Appl. Math. Lett. 16, no. 2, 221-225.

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ADÁN, M., NOVO, V. (2004). Proper efficiency in vector optimization on real linear spaces. J. Optim. Theory Appl. 121, no. 3, 515-540.

GIORGI, G., JIMÉNEZ, B., NOVO, V. (2004). On constraint qualifications in directionally

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MIGLIERINA, E. (2004). Slow solutions of a differential inclusion and vector optimization. Set-Valued Anal. 12, no. 3, 34-356.
ADÁN, M., NOVO, V. (2005). Errata Corrige: Proper efficiency in vector optimization on real linear spaces. J. Optim. Theory Appl. 124, no. 3, 751-751.
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JIMÉNEZ, B., NOVO, V., SAMA, M. (2009). Scalarization and optimality conditions for strict minimizers in multiobjective optimization via contingent epiderivatives. J. Math. Anal. Appl. 352, no. 2, 788-798.
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Desde 2012 hasta 2016

GUTIÉRREZ, C., HUERGA, L., NOVO, V. (2012). Scalarization and saddle points of approximate proper solutions in nearly subconvexlike vector optimization problems. J. Math. Anal. Appl. 389, no. 2, 1046-1058.

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CONGRESOS

Presentaciones de los miembros del grupo en Congresos:

•Desde 2002 hasta 2006

•Desde 2007 hasta 2011

•Desde 2012 hasta 2016

•Desde 2017 hasta 2021

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Desde 2002 hasta 2006

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KHAN, A.A., SAMA, M.: *Conical regularization for state-constrained optimal control problems* , 7th International Congress on Industrial and Applied Mathematics - ICIAM 2011, Vancouver (Canada), 2011.

MIGLIERINA, E., MOLHO, E., RECCHIONI, M.C.: *An interior point method for linearly constrained multiobjective optimization without apriori scalarization*, 21st Conference on

Multi-Criteria Decision Making MCDM XXI, Jyvaskyla, Finland, June 13-17, 2011 (Comunicación invitada).

MIGLIERINA, E.: *A notion of vector pseudogradient with applications in vector optimization*, International Conference on Operations Research, Zurich, Switzerland, August 30 –September 2, 2011 (Comunicación invitada).

SAMA, M., JIMÉNEZ, B., NOVO, V.: *A constraint qualification for vector optimization problems based on a half-space decoupling of the constraint*, International Conference "Optimization, Theory, Algorithms and Applications in Economics", a tribute to Juan Enrique Martínez-Legaz on the occasion of his 60th birthday, Barcelona, October 24-28, 2011.

Desde 2012 hasta 2016

GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Approximation of efficient sets via epsilon-efficient sets*, 21st International Symposium on Mathematical Programming (ISMP 2012), Berlin, August 19-24, 2012 (Comunicación invitada).

GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Conceptos de eficiencia aproximada equivalentes en optimización multiobjetivo*, XXXIII Congreso Nacional de Estadística e Investigación Operativa (SEIO 2012). Madrid, April 17-20, 2012.

GUTIÉRREZ, C., MIGLIERINA, E., MOLHO, E., NOVO, V. *Pointwise well-posedness and scalarization in set optimization*. First French-Italian Workshop on Energy Markets and Models, FIWEM'1. Brescia, March 19-20, 2012.

GUTIÉRREZ, C., MIGLIERINA, E., MOLHO, E., NOVO, V.: *Pointwise well-posedness and scalarization in set optimization*. First French-Italian Workshop on Energy Markets and Models, FIWEM'1. Brescia, March 19-20, 2012

HERNÁNDEZ, E., SAMA, M.: *About optimality conditions for set optimization problems*, Set Optimization Meets Finance, Lutherstadt-Wittenberg, Alemania, August 16-19, 2012.

HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Optimalidad Lagrangiana para soluciones aproximadas propias en optimización vectorial*, XXXIII Congreso Nacional de Estadística e Investigación Operativa (SEIO 2012), Madrid, April 17-20, 2012.

HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Saddle point results for approximate proper efficiency in vector optimization problems*, 25th European Conference on Operational Research EURO XXV, Vilnius, Lituania, July 8-11, 2012 (Comunicación invitada).

MIGLIERINA, E., BIANCHI, M., MOLHO, E., PINI, R.: *A notion of condition number in multiobjective optimization*, 25th European Conference on Operational Research EURO XXV, Vilnius, Lituania, July 8-11, 2012 (Comunicación invitada).

MOLHO, E., GUTIÉRREZ, C., MIGLIERINA, E., NOVO, V.: *A notion of well-posedness in set-valued optimization*, 25th European Conference on Operational Research EURO XXV,

Vilnius, Lituania, July 8-11, 2012 (Comunicación invitada).

SAMA, M., JIMÉNEZ, B., NOVO, V.: *KKT conditions for a nonconvex vector optimization problem*, 2012 Joint Mathematics Meetings, organized by the Mathematical Association of America (MAA) and the American Mathematical Society (AMS), Boston, January 4-7, 2012.

GUTIÉRREZ, C., HUERGA, L., JIMÉNEZ, B., NOVO, V.: *Characterization and properties of approximate proper solutions in vector optimization problems*, 22nd International Conference on Multiple Criteria Decision Making (MCDM2013), Málaga, June 17-21, 2013 (Comunicación invitada).

GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *A new concept of solution in vector optimization defined via improvement sets*, 26th European Conference on Operational Research (XXVI EURO-INFORMS Joint International Conference), Rome, July 1-4, 2013 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Approximate proper solutions of vector optimization problems. Properties and limit behaviour*, 26th European Conference on Operational Research (XXVI EURO-INFORMS Joint International Conference), Rome, July 1-4, 2013 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Relación entre la eficiencia y la eficiencia propia aproximada Benson en optimización vectorial*, XXXIV Congreso Nacional de Estadística e Investigación Operativa (SEIO2013), Castellón, September 11-13, 2013.

JADAMBA, B., KHAN, A.A., SAMA, M.: *Conical regularization of constrained optimization problems in Banach spaces*, Joint Mathematics Meetings of the Mathematical Association of America (MAA) and the American Mathematical Society (AMS), San Diego (EEUU), January 9-12, 2013 (Comunicación invitada).

MIGLIERINA, E.: *Cones with bounded base in infinite dimensional vector optimization*, 26th European Conference on Operational Research (XXVI EURO-INFORMS Joint International Conference), Rome, July 1-4, 2013 (Comunicación invitada).

MOLHO, E., GUTIÉRREZ, C., MIGLIERINA, E., NOVO, V.: *A scalarization scheme in set optimization with applications to Tykhonov well-posedness*, 26th European Conference on Operational Research (XXVI EURO-INFORMS Joint International Conference), Rome, July 1-4, 2013 (Comunicación invitada).

NOVO, V., GUTIÉRREZ, C., JIMÉNEZ, B.: *Soluciones basadas en conjuntos de mejora en optimización vectorial*, XXXIV Congreso Nacional de Estadística e Investigación Operativa (SEIO2013), Castellón, September 11-13, 2013.

GUTIÉRREZ, C.: *Proper -subdifferential of cone convex vector mappings via vector optimization*. 6th Seminar on Optimization and Variational Analysis (OVA6), Universidad Miguel Hernández (Elche), Centro de Investigación Operativa, June 3, 2014 (Comunicación invitada).

GUTIÉRREZ, C.: *Proper -subgradientes of vector-valued functions via Benson approximate efficiency*. V Alicante-Elche-Limoges Meeting on Optimization (ALEL 2014), Mathematical Institute of University of Seville, Seville, June 5-7, 2014 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *A new notion of proper epsilon-subdifferential for vector mappings. Properties and existence conditions*. 12th EUROPT Workshop on Advances in Continuous Optimization, Perpignan (France), July 10-12, 2014.

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *On a new Benson proper epsilon-subdifferential for vector-valued mappings*. XI International Symposium on Generalized Convexity and Monotonicity, IMPA, Rio de Janeiro, Brazil. August 25-30, 2014.

JADAMBA, B., KHAN, A.A., SAMA, M.: *Error estimates for conical regularization of abstract optimization problems.* Joint Mathematics Meetings of the Mathematical Association of America (MAA) and the American Mathematical Society (AMS), Baltimore (EEUU), January 15-18, 2014 (Comunicación invitada).

MIGLIERINA, E.: *Geometric properties of ordering cones in infinite dimensional vector optimization.* Miniworkshop GIAF 2 (Gruppo Italiano Analisi Funzionale), Università di Milano, Milan, Italy, September 17-19, 2014 (Comunicación invitada).

MIGLIERINA, E.: *Geometric properties of ordering cones in infinite dimensional vector optimization*. First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI, Bilbao, Spain. June 30 - July 4, 2014 (Comunicación invitada).

MIGLIERINA, E.: *Stability by set convergences: from Vector to Set optimization*. 7th Workshop on Vector Optimization and Related Topics, UNED, Madrid, Spain, October 24, 2014 (Comunicación invitada).

MOLHO, E.: *Scalarization in set optimization*. First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI, Bilbao, Spain. June 30 - July 4, 2014 (Comunicación invitada).

MOLHO, E.: *Scalarization in set optimization: an axiomatic approach*. 7th Workshop on Vector Optimization and Related Topics, UNED, Madrid, Spain, October 24, 2014 (Comunicación invitada).

RODENAS-PEDREGOSA, J.L.: *Introducción a los problemas de equilibrio vectoriales*. Seminario de doctorandos de Matemáticas de la UCM, Universidad Complutense de Madrid, November 6, 2014 (Ponencia invitada).

SAMA, M., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Optimality conditions for approximate solutions of unconstrained vector optimization problems*. XI International Symposium on Generalized Convexity and Monotonicity, IMPA, Rio de Janeiro, Brazil. August 25-30, 2014 (Comunicación invitada).

SAMA, M., JADAMBA, B., KHAN, A.A.: *Conical regularization of abstract optimization problems. Some new results and applications*. 7th International Conference. Inverse problems: modelling and simulation, Fethiye, Turkey, May 26-31, 2014 (Comunicación invitada).

SAMA, M.: *Integral regularization of state-constrained elliptic control problems*. 7th Workshop on Vector Optimization and Related Topics, UNED, Madrid, Spain, October 24, 2014 (Comunicación invitada).

SAMA, M.: *A set-valued analysis approach to conical regularization of abstract optimization problems*. The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, July 7-11, 2014 (Comunicación invitada).

SAMA, M.: *Conical regularization of abstract constrained optimization problems*. Workshop on Optimization, Game Theory and Related Topics. Dipartimento di Matematica dell'Universita' di Genova, Italy. May 8-9, 2014 (Comunicación invitada).

GUTIÉRREZ, C., JIMÉNEZ, B., MIGLIERINA, E., MOLHO, E.: *Nonlinear scalarization mappings for set orderings*. 13th EUROPT Workshop on Advances in Continuous Optimization (EUROPT2015), Edinburgh, Scotland, July 8-10, 2015.

GUTIÉRREZ, C., JIMÉNEZ, B., MIGLIERINA, E., MOLHO, E.: *Scalarization of set-valued optimization problems in normed spaces*. Modelling, Computation and Optimization in Information Systems and Management Sciences (MCO 2015), Metz, France, May 11-13, 2015 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Approximation of weak efficient solutions in vector optimization*. Modelling, Computation and Optimization in Information Systems and Management Sciences (MCO 2015), Metz, France, May 11-13, 2015 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., NOVO, V., TAMMER, C.: *Duality results for approximate proper solutions in vector optimization*. South Pacific Continuous Optimization Meeting (SPCOM 2015), Adelaide, South Australia, February 8-12, 2015 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., NOVO, V., THIBAULT, L.: *On a proper epsilon-subdifferential for vector mappings. Chain rules*. 27th European Conference on Operational Research (XXVII EURO), Glasgow, Scotland, July 12-15, 2015 (Comunicación invitada).

MOLHO, E., GUTIÉRREZ, C., JIMÉNEZ, B., MIGLIERINA, E.: *An abstract scalarization scheme for quasiordered sets: Some applications to set optimization*. 27th European Conference on Operational Research, Glasgow, Great Britain, July 12-15, 2015 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *Regularization error estimates for integral constraint regularization of state-constrained elliptic control problems*. Joint Mathematics Meetings of the Mathematical Association of America (MAA) and the American Mathematical Society (AMS), San Antonio, Texas, USA, January 10-13, 2015 (Comunicación invitada).

CASINI, E., MIGLIERINA, E., PIASECKI, L., VESELY, L. *Polyhedrality for Lindenstrauss spaces: an example and a characterization*. Lublin-Italian Friends Workshop 2016 on selected topics of Functional Analysis. Lublin, Poland, June 22-25, 2016 (Comunicación invitada).

GUTIÉRREZ, C., HUERGA, L., NOVO, V.: *Scalarization in ordered sets*. VI Alicante - Elche - Limoges International Conference in Optimization Theory and its Applications (ALEL2016), Cartagena, Spain, June 6-8, 2016 (Comunicación invitada).
HERNÁNDEZ, E., LÓPEZ, R.: *Some useful set-valued maps in set optimization*. 28th European Conference on Operational Research, Poznan, Poland, July 3-7, 2016 (Comunicación invitada).
HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Limit behaviour and nonlinear scalarization of approximate efficient solutions in vector optimization*. 28th European Conference on Operational Research (EURO2016), Poznan, Poland, July 3-7, 2016 (Comunicación invitada).
HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Caracterización por escalarización no lineal de soluciones propias Henig en programación multiobjetivo*. X Reunión del Grupo Español de Decisión Multicriterio, Madrid, España, 10 de Junio de 2016 (Comunicación).
HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Proper efficiency in multiobjective optimization with a polyhedral ordering cone*. 7th International Seminar on Optimization and Variational Analysis (OVA7), Alicante, Spain, June 1-3, 2016 (Poster).
LARA, F., LÓPEZ, R.: *Formulas for the q-asymptotic function via c-conjugates, directional derivatives and subdifferentials*. Seminario Universidad Nacional de educación a Distancia, Madrid, Spain, June 30, 2016 (Comunicación invitada)
LÓPEZ, R.: *Stability results for the multivalued variational inequality problem*. XXIX Jornada de Matemática de la Zona Sur, Santa Cruz, Chile, April 21-23, 2016 (Comunicación invitada).
RÓDENAS-PEDREGOSA, J.L., GUTIÉRREZ, C., NOVO, V.: *Henig proper efficiency for vector equilibrium problems on linear spaces*. 28th European Conference on Operational Research (EURO2016), Poznan, Poland, July 3-7, 2016 (Comunicación invitada).
RÓDENAS-PEDREGOSA, J.L., GUTIÉRREZ, C., NOVO, V.: *Una noción de eficiencia propia para problemas de equilibrio vectorial*. XXXVI Congreso Nacional de Estadística e Investigación Operativa y de las X Jornadas de Estadística Pública (SEIO2016). Toledo, September 5-7, 2016.
RÓDENAS-PEDREGOSA, J.L., JARAMILLO, J.A., JIMÉNEZ-SEVILLA, M., SÁNCHEZ-GONZÁLEZ, L.: *A class of Hamilton-Jacobi equations on Banach-Finsler manifolds*. Babes-Bolyai University, Cluj-Napoca (Romania), March 10, 2016 (Comunicación invitada).

Desde 2017 hasta 2021

CASINI, E., MIGLIERINA, E., PIASECKI, L.: *Separable Lindenstrauss spaces whose duals lack the weak^* fixed point property for noexpansive mappings*. Geometric Topology and Geometry of Banach Spaces. 2017, Research workshop of the Israel Science Foundation,

Eilat, Israel, May 14-19, 2017 (Comunicación invitada).

GUTIÉRREZ, C., MIGLIERINA, E., MOLHO, E., NOVO, V.: *Stability in set optimization: an image space approach.* Congreso Bienal de la Real Sociedad Matemática Española 2017 (RSME 2017), Zaragoza, Spain, January 30-February 3, 2017 (Comunicación invitada).

GUTIÉRREZ, C.: *Nonlinear scalarization via algebraic mathematical tools.* Congreso Bienal de la Real Sociedad Matemática Española 2017 (RSME 2017), Zaragoza, Spain, January 30-February 3, 2017.

GUTIÉRREZ, C.: *Optimización Multiobjetivo.* Ciclo de conferencias "El IMUVA os habla", Instituto de Matemáticas de la Universidad de Valladolid, Valladolid, 16 de Marzo de 2017 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Duality results and -subdifferential related to approximate proper solutions of a vector optimization problem.* Congreso Bienal de la Real Sociedad Estadística Española (RSME2017), Zaragoza, Spain, January 30-February 3, 2017 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Characterization of proper efficiency in multiobjective optimization through nonlinear scalarization.* 12th International Symposium on Generalized Convexity and Monotonicity (GCM12), Hajdúszoboszló, Hungría, August 27-September 2, 2017

HUERGA, L., GUTIÉRREZ, C., NOVO, V.: *Characterization of proper efficient solutions in non-convex multiobjective optimization with a polyhedral ordering cone.* 8th International Seminar on Optimization and Variational Analysis (OVA8), Alicante, Spain, June 29-30, 2017 (Comunicación invitada).

MOLHO, E.: *Stability in set optimization: a set-covergence approach.* 7th German-Polish Conference on Optimization (GPCO 2017), Bedlewo, Poland, August 27 - September 1, 2017 (Comunicación invitada).

RÓDENAS-PEDREGOSA, J.L., GUTIÉRREZ, C., NOVO, V.: *Nonlinear scalarization in real linear spaces and vector equilibrium problems.* 12th International Symposium on Generalized Convexity and Monotonicity (GCM12), Hajdúszoboszló, Hungría, August 27-September 2, 2017.

GUTIÉRREZ, C., HUERGA, L., KÖBIS, E., TAMMER, C.: *Generic properties to scalarize ordered sets.* XXXVII Congreso Nacional de Estadística e Investigación Operativa, Oviedo, Spain. May 29 to June 1, 2018 (Comunicación invitada).

GUTIÉRREZ, C.: *A stationary point theorem for set-valued mappings on a metric space.* Colloquium &International Conference on Variational Analysis and Nonsmooth Optimization (ICVANO2018), Martin-Luther University, Halle-Wittenberg, Halle, Germany. July 2018 (Comunicación invitada).

GUTIÉRREZ, C., NOVO, V., RÓDENAS-PEDREGOSA, J. L.: *A Weierstrass theorem for weakly efficient solutions of vector equilibrium problems.* XXIX European Conference on

Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

GUTIÉRREZ, C., NOVO, V. RÓDENAS-PEDREGOSA, J. L.: *Algebraic nonlinear scalarization in ordered linear spaces.* 16th EUROPT Workshop on Advances in Continuous Optimization (EUROPT2018), University of Almería, Spain, July 2018 (Comunicación invitada).

HERNÁNDEZ, H, LÓPEZ, R.: *Set optimization problems under asymptotic analysis.* XVI EUROPT Workshop on Advances in Continuous Optimization, Almería - Spain, July 11-13, 2018.

HERNÁNDEZ, H, LÓPEZ, R.: *Asymptotic analysis in set optimization.* XXVII Congreso de Matemática Capricornio COMCA'18, Antofagasta - Chile, July 25-27, 2018.

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Approximate Henig proper solutions in vector optimization with difference of mappings.* XXXVII Congreso Nacional de Estadística e Investigación Operativa. Oviedo, Spain, May 29 to June 1, 2018 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., NOVO, V., SAMA, M.: *Limit behaviour of Henig approximate proper solutions in vector optimization.* XXIX European Conference on Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

JIMÉNEZ, B., GUTIÉRREZ, C., HUERGA, L., NOVO, V.: *Approximate solutions of vector optimization problems via improvement sets in real linear spaces.* XXXVII Congreso Nacional de Estadística e Investigación Operativa, Oviedo, Spain, May 29 to June 1, 2018 (Comunicación invitada).

LÓPEZ, R.: *Global stability results for interval optimization problems.* XXIX European Conference on Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

LÓPEZ, R.: *Variational convergence of vector functions and its application to multiobjective optimization.* International Congress of Mathematicians ICM 2018, Rio de Janeiro - Brasil, August 01-09, 2018.

LÓPEZ, R.: *Set optimization problems.* XXXIV Jornada de Matemática del Departamento de Matemática de la Universidad de Tarapacá, Arica - Chile, November 08-09, 2018.

LÓPEZ, R.: *On convergence notions for sets.* I Congreso Latinoamericano de Matemática COLAMAT, Tacna-Perú, December 06-07, 2018.

MIGLIERINA, E., DE BERNARDI, C. A., MOLHO, E.: *Stability of convex feasibility problem: the finite dimensional case.* XXIX European Conference on Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

MOLHO, E., CAPRARI, E., CERBONI L.: *Some duality results in set optimization with applications.* XXIX European Conference on Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

RÓDENAS-PEDREGOSA, J. L., GUTIÉRREZ, C., NOVO, V.: *Ekeland variational principles for bifunctions via algebraic concepts in the image space.* XXXVII Congreso Nacional de Estadística e Investigación Operativa, Oviedo, Spain, May 29 to June 1, 2018 (Comunicación invitada).

RÓDENAS-PEDREGOSA, J. L., GUTIÉRREZ, C., NOVO, V.: *Existence of approximate strict solutions of optimization problems.* XXIX European Conference on Operational Research (EURO2018), University of Valencia, Spain, July 2018 (Comunicación invitada).

SAMA, M., JADAMBA, B., KHAN, A., LÓPEZ, R.: *Conical regularization of multiobjective optimization problems.* 23rd International Symposium in Mathematical Programming (ISMP2018), Bordeaux (France), July 2018.

DE BERNARDI, C., MIGLIERINA E.: *Stability for the alternating projections method.* 30th European Conference on Operational Research (EURO 2019), Dublin, Ireland, June 23-26, 2019.

GUTIÉRREZ, C.: *Characterizations of weakly efficient solutions of vector optimization problems.* 30th European Conference on Operational Research (EURO2019), Dublin, Ireland, June 23-26, 2019.

GUTIÉRREZ, C.: *Scalarization results for weakly nondominated solutions of vector optimization problems defined by the notion of quasi interior.* XXXVIII Congreso Nacional de Estadística e Investigación Operativa (SEIO2019), Alcoy, September 3-6, 2019.

HERNÁNDEZ, H., LÓPEZ, R.: *A Gamma-convergence for set-valued maps.* XXXII Jornada de Matemática de la Zona Sur, Punta Arenas - Chile, April 24-26, 2019.

HERNÁNDEZ, H., LÓPEZ, R.: *Stability for set optimization problems via a generalized variational convergence.* XIV International Seminar on Optimization and Related Areas ISORA, Lima - Perú, October 07-11, 2019.

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Characterization of approximate proper effciency in vector optimization with difference of mappings.* 30th European Conference on Operational Research (EURO2019), Dublin, Ireland, June 23-26, 2019 (Comunicación invitada).

HUERGA, L., GUTIÉRREZ, C., JIMÉNEZ, B., NOVO, V.: *Optimality conditions for proper solutions in multiobjective optimization with a polyhedral cone.* 28th Spanish Conference on Statistics and Operations Research (SEIO2019), Alcoy, September 3-6, 2019 (Comunicación invitada).

JADAMBA, B., KHAN, A.A., LÓPEZ, R., SAMA, M.: *Conical regularization for multi-objective optimization problems.* II Congreso Latinoamericano de Matemática COLAMAT, Tacna-Perú, December 05-06, 2019.

JIMÉNEZ, B.; NOVO, V.; VILCHEZ, A.: *A set scalarization function based on the oriented distance: first properties and applications to set optimization.* XXXVIII Congreso Nacional de Estadística e Investigación Operativa (SEIO2019), Alcoy, September 3-6,

2019 (Comunicación invitada).

LÓPEZ, R.: *Approximations of interval optimization problems.* IV Congreso Matemático Estudiantil de la Universidad Tomás Frías, Potosí-Bolivia, March 25-29, 2019.

LÓPEZ R., SAMA, M., JADAMBA B., KHAN A.A.: *Conical regularization for multi-objective optimization problems*. II Congreso Latinoamericano de Matemática (COLAMAT), Tacna, Perú, December 05-06, 2019 (Comunicación invitada).

SAMA, M., HAO, D.N, KHAN A.A., TAMMER, C.: *A Energy Functional for Inverse Problems in Variational Inequalities.* Applied Inverse Problems (AIP 2019), Grenoble, France, July 8-12, 2019 (Comunicación Invitada)

SAMA, M., HUERGA, L., JADAMBA, B.: *Kaliszewski dilating cones in infinite dimensional spaces.* 30th European Conference on Operational Research (EURO 2019), Dublin, Ireland, June 23-26, 2019 (Comunicación invitada).

SAMA, M., JADAMBA B., KHAN A.A., LÓPEZ R.: *Conical Regularization for MultiObjective Optimal Control Problems.* 9th International Congress on Industrial and Applied Mathematics, Valencia, Spain, July 15-19, 2019 (Comunicación Invitada)

LÓPEZ, R.: *Derivadas direccionales generalizadas y su aplicación en los problemas de optimización.* III Congreso Latinoamericano de Matemática (COLAMAT), Tacna, Perú, October 29-30, 2020 (Comunicación invitada).

LÓPEZ, R., SAMA, M.: *Horizon maps and graphical convergence revisited.* XI Escuela Dinámicas de Control, Instituto de Investigación Matemática, Universidad Mayor de San Andrés, La Paz, Bolivia, June 22-26, 2020 (Comunicación invitada).

CAPRARI, E., CERBONI BAIARDI, L., MOLHO, E.: *Robustification and scalarization of a parametric vector optimization problem: a noncomponentwise approach*, 31st European Conference on Operational Research – Athens, Greece, 2021, July 11-14 (Comunicación invitada)

CAPRARI, E., CERBONI BAIARDI, L., MOLHO, E.: *Robustification and scalarization of a parametric vector optimization problem: a noncomponentwise approach*, AMASES XVL, *session "*Optimization, Variational Analysis, and Applications*", September 13-18, 2021 –Distributed remote mode.*

DE BERNARDI, C.A.: *Extension of continuous quasiconvex functions.* European Conference on Operational Research EURO 2021, Athens, Greece, July 11-14, 2021 (Comunicación invitada).

DE BERNARDI, C.A.: *Extension of continuous quasiconvex functions.* AMASES XLV Conference, Reggio Calabria, Italy, September 13-18, 2021 (Comunicación invitada).

GUTIÉRREZ, C.: *An algebraic view of the smallest strictly monotonic function*. Centro de Modelamiento Matemático (CMM), Seminario de Optimización y Equilibrio, Santiago de Chile, November 4, 2020 (Comunicación invitada)

GUTIÉRREZ, C.: *Ekeland variational principles in vector equilibrium problems*. 18th Workshop on Advances in Continuos Optimization (EUROPT2021), Toulouse, July 7-9, 2021

GUTIÉRREZ, C.: *Ekeland variational principles for vector functions and order cones with nonempty topological interior*. 31st European Conference on Operational Research (EURO2021), Athens, July 11-14, 2021

GUTIÉRREZ, C.: *Existence conditions for weak effi cient solutions in vector optimization*. International Conference on Variational Analysis and Nonsmooth Optimization (ICVANO2021), online-colloquium, July 15-16, 2021 (Comunicación invitada)

JADAMBA, B., HAWKS, R., KHAN, A.A., SAMA, M., YANG, Y.: *Parameter identification problem in a stochastic partial differential equation,* AMS Fall Western Sectional Meeting, October 23-24, 2021

LÓPEZ, R., HERNÁNDEZ, E.: *Stability of set optimization problems*, XVIII EUROPT Workshop on Advances in Continuous Optimization (Online), Toulouse-France, July 07-09, 2021 (Comunicación invitada)

LÓPEZ, R., SAMA, M.: *Horizon maps and graphical convergence*, XXXIII Jornada de Matemática de la Zona Sur (Online), Temuco-Chile, April 20-24, 2021 (Comunicación invitada)

LÓPEZ, R., SAMA, M.: *On multivalued variational inequalities*, XXXI European Conference on Operational Research (Online), Athens-Greece, July 11-14, 2021. (Comunicación invitada)

LÓPEZ, R., SAMA, M.: *Stability of multivalued variational inequalities*, XII Escuela Dinámicas de Control (Online), Instituto de Investigación Matemática, Universidad Mayor de San Andrés, La Paz-Bolivia, July 26-30, 2021. (Comunicación invitada)

MIGLIERINA, E., HUERGA, L., MOLHO, E., NOVO, V.: *Some remarks on proper minimality in set optimization* 31st European Conference on Operational Research (EURO2021), Athens, September 11-14, 2021 (Comunicación invitada)

Desde 2022 hasta la actualidad

AN, D.T.V., GUTIÉRREZ, C.: *Differential stability properties in scalar and vector optimization* . 39th Spanish Conference on Statistics and Operations Research (SEIO2022), Granada, June 7-10, 2022.

CAPRARI E., CERBONI BAIARDI L., MOLHO E. : *Some remarks on scalarization in games with vector pay-offs*. EURO XXXI –Espoo, Finland, July 3-6 2022 (Comunicación invitada).

DE BERNARDI C.A.: *Extension of continuous quasiconvex functions*. European Conference on Operational Research EURO 2022, Espoo, Finland, July 3-6, 2022 (Comunicación invitada).

DE BERNARDI C.A.: *Unit balls of Polyhedral Banach spaces with many extreme points*. PFAMA - Progress in Functional Analysis: Methods and Applications, Lecce, Italy, September 19-21, 2022.

DE BERNARDI C.A.: *On the Extension of Quasiconvex Functions from Uniformly Convex Sets*. AMASES XLVI Conference, Palermo, Italy, September 22-24, 2022.

DE BERNARDI ,C.A., MIGLIERINA E.: *Regularity and stability for a convex feasibility problem.* FAATNA 2022, Functional Analysis, Approximation Theory and Numerical Analysis –Matera, Italy, July 5-8, 2022 (Comunicación invitada).

GUTIÉRREZ, C.: *Differential properties to the weak optimal value mapping in convex vector optimization.* 32nd European Conference on Operational Research (EURO2022), Espoo, July 3-6, 2022.

GUTIÉRREZ, C., LÓPEZ, R.: *Conditions for the existence of weakly efficient solutions to vector optimization problems*. 19th Workshop on Advances in Continuous Optimization (EUROPT2022), Caparica, July 29-30, 2022.

GUTIÉRREZ, C., LÓPEZ, R.: *Existence results for weak efficient solutions of vector optimization problems via scalarization*. 13th International Symposium on Generalized Convexity and Monotonicity (GCM13), Lima, September 13-16, 2022.

HUERGA, L.: *Characterization through scalarization of a new notion of quasi efficiency in multiobjective optimization.* International Meeting on Functional Analysis and Continuous Optimization, Elche, Spain, June 16-17, 2022.

HUERGA, L., JIMÉNEZ, B., LUC, D.T., NOVO, V.: *A unified concept of approximate and quasi efficient solutions in multiobjective optimization*. XXXIX Spanish Conference on Statistics and Operations Research (SEIO 2022), Granada, Spain, June 7-9, 2022 (Comunicación invitada).

MOLHO, E., HUERGA, L., MIGLIERINA, E., NOVO, V.: *On proper minimality in robust vector optimization: a set optimization approach*. 19th EUROPT Workshop on Advances in continuous Optimization, Lisbon, July 29-30, 2022 (Comunicación invitada).

SAMA, M., ARIAS, J.: *Smart thermostat thermal random models for residential buildings*. XXIX Spanish Conference on Statistics and Operations Research (SEIO 2022), Granada, Spain, June 7-9, 2022 (Comunicación invitada).

SAMA, M., ARIAS, J.: *Modelling uncertainty in thermal models for residential buildings*. Euro Opt 2022, Lisboa, Portugal , 29-30 julio, 2022.

GUTIÉRREZ, C.: *Vector versions of the Ekeland variational principle.* XXXVI Jornada de Matemática UTA-2022, Universidad de Tarapacá, Arica (Chile), 6 y 7 de diciembre, 2022 (Comunicación invitada).

GUTIÉRREZ, C.: *On quasi efficient solutions of multiobjective optimization problems.* Nonsmooth And Variational AnaLysis (NAVAL), Institut de Mathématiques de Bourgogne, Dijon (France), June 26-28, 2023.

GUTIÉRREZ, C.: *Quasi efficient solutions in multiobjective optimization.* XV International Seminar on Optimization and Related Areas (XV ISORA), Universidad Nacional de San Agustín de Arequipa, Arequipa (Peru), October 02-06, 2023.

GUTIÉRREZ, C.: *Conceptos y propiedades de soluciones cuasi-eficientes en optimización multiobjetivo*. XL Congreso Nacional de Estadística e Investigación Operativa (SEIO 2023), Elche, España, 07-10 noviembre, 2023.

SAMA, M., KHAN, A.: *A new stochastic regularized second-order iterative scheme for optimal control and inverse problems in partial differential equations with random data*. Euro Opt 2023, Budapest, Hungría, 23-25 agosto, 2023 (Comunicación invitada).

SAMA, M.: *Parameter identification in partial differential equations with random data*. International Workshop in Variational Analysis and Optimization, Messina, Italia, 14-15 septiembre, 2023 (Comunicación invitada).

DE BERNARDI, C.A.: *Unit balls of Polyhedral Banach spaces with many extreme points*. Methods in Banach Spaces, Badajoz, Spain, June 11-14, 2024.

DE BERNARDI, C.A.: *Unit balls of Polyhedral Banach spaces with many extreme points.* Analysis Seminar Innsbruck, Innsbruck, Austria, September 24-27, 2024.

GUTIÉRREZ, C.: *Efficient robust solutions of optimization problems with uncertain data.* Chilean-Peruvian Conference on Optimization and Variational Analysis (ChiPOVA-2024), Arica, Chile, May 06-10, 2024 (comunicación invitada).

GUTIÉRREZ, C.: *Nondominated solutions of uncertain optimization problems*. French German Spanish Conference on Optimization 2024 (FGS 2024), Gijón, Spain, June 18-21, 2024.

GUTIÉRREZ, C.: *Efficient solutions of uncertain multiobjetive optimization problems.* 14th International Symposium on Generalized Convexity and Monotonicity (GCM14), Pisa, Italy, September 2-6, 2024.

MIGLIERINA, E., CASINI, E., PIASECKI, L.: *Weak fixed point property in l1*. VIII Symposium on Nonlinear Analysis –Torun, Poland, June 17-21, 2024 (Comunicación invitada within the Session Lectures “Metric fixed point theory and related topics”). Weak fixed point property in l1.

MIGLIERINA, E., CASINI, E., PIASECKI, L.: *Subspaces of separable L1-preduals: W everywhere.* 9th European Congress of Mathematics –Sevilla, Spain, July 15-19, 2024 (Comunicación invitada within the Mini-Symposium “Geometry of Banach and metric spaces and fixed point theory”).

MOLHO, E., CAPRARI, E., CERBONI BAIARDI, L.: *Scalarization and robustification in vector games*, Sixth International Conference on Set Optimization with Applications to Economics, Finance, Statistics and Game Theory, SOfA 2024, Stresa, Italy, June 3-7, 2024.

MOLHO, E., CAPRARI E., CERBONI BAIARDI L.: *Games with incomplete preferences: a pointwise completion approach*, French-German-Spanish Conference on Optimization, Gijón, June 18-21, 2024 (Comunicación invitada).

MOLHO, E., CAPRARI, E., CERBONI BAIARDI, L.: *Games with incomplete preferences: a pointwise completion approach*, EURO XXXII –Copenhagen, June 30-July 3, 2024 (Comunicación invitada).

CASINI, E., MIGLIERINA, PIASECKI, Å.: Subspaces of separable L1-preduals: W everywhere. Functional Analysis and applications –FATA 2025 –Genova, Italy, 2025, February 19-21 (Comunicación invitada).

DE BERNARDI C.A., MIGLIERINA, E., MOLHO, E., SOMAGLIA, J.: *Stochastic approximation in convex multiobjective optimization,* International Workshop Equilibria and Applications –EA 2025 –Brescia, Italy, June 12-13, 2025 (Comunicación invitada).

DE BERNARDI, C.A.: *Tilings and coverings of normed spaces,* FATA 2025 - Genova, Italy, February 19-22, 2025.

DE BERNARDI C. A., MIGLIERINA, E., MOLHO, E., SOMAGLIA, J., *Stochastic approximation in convex multiobjective optimization*, Europt 2025, Southampton, Unitd Kingdom, June 29 - July 2, 2025 (Comunicación invitada).

DE BERNARDI C. A., MIGLIERINA, E., MOLHO, E., SOMAGLIA, J., *Stochastic approximation in convex multiobjective optimization*, 16th Viennese Conference on Optimal Control and Dynamic Games, July 15-18, 2025 (Comunicación invitada).

GUTIÉRREZ, C.: *Vector Solutions of Uncertain Convex Multiobjective Optimization Problems,* International Conference on Optimization, Variational Analysis and Applications (ICOVAO 2025), Vietnam Institute for Advanced Study in Mathematics (VIASM), Hanói, Vietnam, March 10-15, 2025 (Comunicación invitada).

GUTIÉRREZ, C.: *Multiobjective Optimization with Variable Order*, Norwegian Workshop on Mathematical Optimization, Nonlinear and Variational Analysis (MONVA2025), Trondheim, Norway, May 19-20, 2025 (Comunicación invitada).

GUTIÉRREZ, C.: *Multiobjective Optimization with Variable Ordering Structure*, International Workshop on Variational Analysis and Optimization III (VAO2025), Pavia, Italy, September 8-9, 2025 (Comunicación invitada).

GUTIÉRREZ, C.: *Enhancing Robust Solutions of Uncertain Optimization Problems*, Workshop on Optimization and Variational Analysis, Universidad del Pacífico, Lima, Perú, October 2-3, 2025 (Comunicación invitada).

GUTIÉRREZ, C.: *Linear Scalarization of Vector Optimization Problems with Variable Ordering Structures,* XVI International Seminar on Optimization and Related Areas (ISORA2025), Cusco, Perú, October 6-10, 2025 (Comunicación invitada).

HUERGA, L.: *New concepts of proper minimality in set optimization*, Workshop: New Frontiers in Optimization, Jerez de la Frontera, España, 17 de enero, 2025 (Comunicación invitada).

LÓPEZ, R.: *Global stability results for interval optimization problems,* French-German-Spanish Conference on Optimization, Gijón, España, 18-21 de junio, 2024. (conferencia

online).

LÓPEZ, R.: *Asymptotics, stability and well-posedness in variational analysis,* XXXII Congreso de Matemática Capricornio COMCA'24, Arica, Chile, 31 julio-02 agosto, 2024. (conferencia invitada).

LÓPEZ, R., GARCÍA, Y., GOICOCHEA, B., MARTÍNEZ, J.: *Asymptotic mappings for multifunctions.* Workshop on Optimization and Variational Analysis, Lima, Perú, 01-03 octubre, 2025. (conferencia invitada).

LÓPEZ, R., GUTIÉRREZ, C.: *Approximation of multiobjective optimization problems,* XVI International Seminar on Optimization and Related Areas ISORA, Cusco, Perú, 06-10 octubre, 2025 (conferencia invitada).

MOLHO, E., HUERGA, L., MIGLIERINA, E., NOVO, V. *On proper minimality in set optimization*, International Workshop "Equilibria and Applications", Brescia, Italy, June 12-13, 2025 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *Error Estimates for Finite Element Discretization of State-Constrained Elliptic Multiobjective Control Problems*, Workshop: New Frontiers in Optimization, Jerez de la Frontera, España, 17 de enero, 2025 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *Numerical Analysis of State-Constrained Elliptic Multiobjective Control Problems: Finite Element Discretization and Error Estimates,* XLI Congreso Nacional de Estadística e Investigación Operativa y de las XV Jornadas de Estadística Pública (SEIO 2025), Lleida, España, 10-13 junio, 2025 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *An Abstract Framework for Error Estimates in State-Constrained Elliptic Multiobjective Control Problems,* Faculty of Mathematics and Statistics, Ton Duc Thang University (TDTU), Ho Chi Minh, Vietnam, 6 de abril, 2025 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *An Abstract Framework for Error Estimates in State-Constrained Elliptic Multiobjective Control Problems,* Hanoi Pedagogical University 2, Phúc Yên, Vietnam, 17 de abril, 2025 (Comunicación invitada).

SAMA, M., KHAN, A.A.: *An Abstract Framework for Error Estimates in State-Constrained Elliptic Multiobjective Control Problems,* International Conference on Optimization, Variational Analysis and Applications (ICOVAO 2025), Vietnam Institute for Advanced Study in Mathematics (VIASM), Hanói, Vietnam, 10-15 de marzo, 2025 (Comunicación invitada).

IGUALDAD DE GÉNERO

En coherencia con el valor asumido de la igualdad de género, todas las denominaciones que en esta Guía hacen referencia a órganos de gobierno unipersonales, de representación, o miembros de la comunidad universitaria y se efectúan en género masculino, cuando no se hayan sustituido por

términos genéricos, se entenderán hechas indistintamente en género femenino o masculino, según el sexo del titular que los desempeñe.