

## CURRICULUM VITAE

### PERSONAL

Name : FABIÁN FLORES-BAZÁN  
Birthdate : April 24, 1964  
Citizenship : Peruvian  
Marital Status : Married  
Address : Universidad de Concepción,  
Facultad de Ciencias Físicas y Matemáticas,  
Departamento de Ingeniería Matemática,  
Casilla 160-C, Concepción, Chile  
Phone: +56-41-2204539 / 2203117 (Anex. 4526)  
Telefax: +56-41-2251529  
Electronic mail: fflores@ing-mat.udec.cl

### EDUCATION

B.Sc. Mathematics  
Universidad Nacional de Ingeniería (U.N.I.)  
Faculty of Sciences, Lima - Perú, May 1987.  
Ph.M. International School for Advanced Studies, Trieste - Italy, October 1990.  
Thesis topic: Non-convex symmetric problems in the Calculus of Variations  
(*cum laude*).  
Thesis adviser: Professor Arrigo Cellina.  
Ph.D. International School for Advanced Studies, Trieste - Italy, October 1992.  
Thesis topic: Relaxation and Non-convex problems in the Calculus of Variations.  
Thesis adviser: Professor Arrigo Cellina.  
Licenciate Mathematics  
Universidad Nacional de Ingeniería  
Faculty of Sciences, Lima - Perú, August 1993.  
Thesis topic: Dualidad en Optimización No-convexa y Aplicaciones (*excellence*).

### SCIENTIFIC EMPLOYMENT AND ACADEMIC RESPONSABILITY

4/84 to 4/87: Assistant Student, Faculty of Sciences, U.N.I.. Lima - Perú. Courses on: Differential and Integral Calculus. Real Analysis.

6/87 to 11/88: Assistant Professor, Faculty of Sciences, U.N.I.. Lima - Perú. Teaching on: Real and Complex Analysis, Introduction to the Ordinary/Partial Differential Equations.

8/87 to 9/88: M.Sc. Student, Universidad Nacional de Ingeniería, Faculty of Sciences. Supervisor: Professor Eugen Blum. Subject: Optimization Theory.

10/88 to 10/92: Ph.D. Student, International School for Advanced Studies. Trieste - Italy. Supervisor: Professor Arrigo Cellina.

11/92 to 04/94: Associate Professor, Faculty of Sciences, U.N.I. Lima - Perú. Teaching on Post-graduate courses: Topology, Calculus of Variations and Optimization theory.

04/94 to 12/99: Associate Professor, Department of Mathematical Engineering, Faculty of Physical and Mathematical Sciences, University of Concepción. Concepción - Chile. Teaching on Pre and

Postgraduate courses: Linear/Nonlinear Mathematical Programming, Calculus of Variations and Optimization. Permanent Member of the Doctorate Program in Applied Sciences with major on Mathematical Engineering.

01/2000 to present Full Professor (Profesor Titular), Department of Mathematical Engineering, Faculty of Physical and Mathematical Sciences, University of Concepción. Concepción - Chile. Teaching on Pre and Postgraduate courses: Linear/Nonlinear Mathematical Programming, Calculus of Variations and Optimization. Permanent Member of the Doctorate *Program in Applied Sciences with major on Mathematical Engineering*.

03/2000 to 12/2010 Associate Researcher, Centre for Mathematical Modeling, School of Engineering, University of Chile. Santiago - Chile

01/1998 to 12/2005 Regular Associate Member, The Abdus Salam International Centre for Theoretical Physics, Trieste - Italy.

#### DISTINCTIONS RECEIVED/ACADEMIC HONORS

Honorary Professor from *Universidad Nacional Pedro Ruiz Gallo*, Lambayeque - Perú, September 15, 2008.

Award in Sciences 2007 by the Town Council of Concepción, Chile, October 2007.

Optimization (ISI Journal, Taylor & Francis Ltd. United Kingdom), Member of the Editorial Board, since January 2006.

The Open Mathematics Journal (Bentham Science Publishers), Member of the Editorial Advisory Board, since November 2007.

Notas de Matemáticas (Sociedad de Matematica de Chile), Member of the Editorial Board, 2001 – 2005.

Frontiers of Science (Chilean Academy of Sciences), Selected member, 2007 – 2009.

Working Group on Generalized Convexity (WGGC) Member of the International Scientific Committee, 2006 – 2009 ([www.genconv.org](http://www.genconv.org)).

National Commission for Scientific and Technological Research (CONICYT - Chile), Member of the Mathematics Adviser Committee, May 2006 - June 2009.

Sociedad Peruana de Matemática Aplicada y Computacional (SPMAC), Lima - Perú: Honorary Associate Member, since February 2006.

The Abdus Salam International Centre for Theoretical Physics, Trieste - Italy: Regular Associate Member, January 1998 - December 2005.

Academia Nacional de Ciencia y Tecnología (ANCyT), Lima - Perú: Corresponding Member, since March 2005.

Universidad Nacional de Trujillo (UNT), Trujillo - Perú:

• Honored as a **Distinguished Guest** at **Universidad Nacional de Trujillo**, in occasion of the *V Italian - Latin American Conference on Applied and Industrial Mathematics (ITLA 2004)* (15-18 Diciembre, 2004).

Special Merit Academic Award by Universidad de Concepción, Concepción - Chile, March 2007 - December 2009; March 2005 - February 2007; March 2001 - February 2005.

#### SCHOLARSHIPS/FELLOWSHIPS/GRANTS

National Council of Sciences and Technology (Consejo Nacional de Ciencia y Tecnología), Lima - Perú:

- National Merit Scholarship (08/1987 to 09/1988)

International Centre for Theoretical Physics (ICTP), Trieste - Italy:

- Study Grant at SISSA/ISAS (10/1988 to 10/1992)
- Fellowships: August 16 - September 09, 1988.  
September 02 - October 01, 1993.  
October 21 - December 13, 1996.  
April 21 - May 09, 1997.  
August 27 - September 26, 1998: as Regular associate.  
August 19 - September 03, 2000: as Regular associate.  
July 17 - August 31, 2001: as Regular associate.  
July 30 - September 10, 2002: as Regular associate.  
July 10 - August 21, 2003: as Regular associate.  
September 09 - October 14, 2004: as Regular associate.  
July 27 - September 11, 2005: as Regular associate.
- Regular Associate Member: January 1998 - December 2005.

International School for Advanced Studies (ISAS/SISSA), Trieste - Italy:

- Fellowships: December 05, 1994 - February 28, 1995.  
June 22 - June 28, 1996.  
August 06 - August 15, 1998.  
January 07 - February 06, 2002.

International Mathematical Union (IMU):

- Grant (for senior mathematicians, above 35 years old) to attend the International Congress of Mathematicians, Madrid-Spain, August 22-30, 2006.
- Grant (for senior mathematicians, above 35 years old) to attend the International Congress of Mathematicians, Beijing-China, August 20-28, 2002.
- Grant (for young mathematicians, below 35 years old) to attend the International Congress of Mathematicians, T.U., Berlin-Germany, August 18-27, 1998.
- Grant (for young mathematicians, below 35 years old) to attend the International Congress of Mathematicians, E.T.H., Zürich-Switzerland, August 03-11, 1994.
- Grant awarded from the *Commission on Development and Exchanges* (October 1996; October 2004).

Swiss Federal Institute of Technology:

- Grant from the Organizing Committee of the *International Symposium on Mathematical Programming*, Lausanne-Switzerland, August 1997.

## SCIENTIFIC PUBLICATIONS

Papers published in international refereed journals:

1. “Radially Symmetric Solutions of a Class of Problems of the Calculus of Variations without convexity assumptions”, *Ann. Inst. Henri Poincaré Analyse non Linéaire*, **9** No 4 (1992), 465–478 (with A. Cellina).
2. “Existence Theorems for a Class of Non-convex Problems in the Calculus of Variations”, *J. Optim. Theory Appl.*, **78** No 1 (1993), 31–48.

3. “The Lack of Lower Semicontinuity and Non-existence of Minimizers”, *Nonlinear Analysis: TMA*, **23** No 1 (1994), 143–153.
4. “On Total Differential Inclusions”, *Rendiconti del Seminario Matematico della Università di Padova*, **92** (1994), 9–16 (with A. Bressan).
5. “Multivariable Aumann Integral and Controlled Wave Equations”, *Journal of Mathematical Analysis and Applications*, **189** No 2 (1995), 315–334 (with A. Bressan).
6. “On a notion of subdifferentiability for non-convex functions”, *Optimization: a journal of mathematical programming and operations research*, **33** No 1 (1995), 1–8.
7. “On lower perturbations of a class of non-convex integrals”, *Numerical Functional Analysis and Optimization*, **16** No 1 & 2 (1995), 111–125.
8. “Some Remarks about Relaxation Problems in the Calculus of Variations”, *Proceedings of the Royal Society of Edinburgh Sect. A*, **126** No 3 (1996), 665–675.
9. “On Radial Solutions to Non-convex Variational Problems”, *Houston Journal of Mathematics*, **22** No 1 (1996), 161–181.
10. “On minima of the difference of functions”, *Journal Optimization Theory and Applications*, **93** No 3 (1997), 525–531.
11. “Approximate minima via the Ekeland variational principle”, *Numerical Functional Analysis and Optimization*, **18** No 7 & 8 (1997), 777–788.
12. “Simplified Global Optimality Conditions in Generalized Conjugation Theory” (Chapter 14) in *Generalized Convexity, Generalized Monotonicity: Recent Results*, Jean-Pierre Crouzeix et al. (eds.), Kluwer Academic Publishers, Boston, London, Dordrecht (1998) 305–329 (with J.E. Martínez-Legaz).
13. “Non-convex variational problems related to a hyperbolic equation”, *SIAM, J. on Control and Optimization*, **37** No 6 (1999), 1751–1766 (with S. Perrotta).
14. “Optimal solutions in an allocation process for a continuum of traders”, *J. of Global Optimization*, **16** No 2 (2000), 153–165.
15. “Existence theorems for generalized noncoercive equilibrium problems: the quasiconvex case”, *SIAM, J. on Optimization*, **11** No 3 (2000), 675–690.
16. “Simplified optimality conditions for minimizing a difference of vector-valued functions”, *J. of Optimization Theory and Applications*, **108** No 3 (2001), 571–586 (with W. Oettli).
17. “Optimality conditions in non-convex set-valued optimization”, *Mathematical Methods of Operations Research*, **53** No 3 (2001), 403–417.
18. “A variational problem related to a continuous-time allocation process for a continuum of traders”, *J. of Mathematical Analysis and Applications*, **261** No 2 (2001), 448–460 (with J.-P. Raymond).
19. “Ideal, weakly efficient solutions for vector optimization problems”, *Math. Program., Ser. A*, **93** No 3 (2002), 453–475.
20. “Generalized vector quasi-equilibrium problems with applications”, *J. of Mathematical Analysis and Applications*, **277** No 1 (2003), 246–256 (with Q. H. Ansari).
21. “Vector equilibrium problems under asymptotic analysis”, *Journal of Global Optimization*, **26** No 2 (2003), 141–166 (with Fernando Flores-Bazán).

22. “Radial epiderivative and asymptotic functions in non-convex vector optimization”, *SIAM J. Optimization*, **14** No 1 (2003), 284–305.
23. “Existence theory for finite dimensional pseudomonotone equilibrium problems”, *Acta Applicandae Mathematicae*, **77** No 3 (2003), 249–297.
24. “Semi-strictly quasiconvex vector functions and non-convex vector optimization”, *Mathematical Methods of Operations Research*, **59** No 1 (2004), 129–145.
25. “The linear complementarity problem under asymptotic analysis”, *Mathematics of Operations Research*, **30** No 1 (2005), 73–90 (with Rubén López).
26. “On the representation of approximate subdifferentials for a class of generalized convex functions”, *Set-Valued Analysis*, **13** No 2 (2005), 151–166 (with Dante Carrasco Olivera).
27. “An iterative algorithm for random generalized nonlinear mixed variational inclusions for random fuzzy mappings”, *Applied Mathematics and Computation*, **167** No 2 (2005), 1400–1411 (with Rais Ahmad).
28. “Characterizing  $\mathbf{Q}$ -matrices beyond  $\mathbf{L}$ -matrices”, *Journal of Optimization Theory and Applications*, **127** No 2 (2005), 447–457 (with Rubén López).
29. “Asymptotic analysis, existence and sensitivity results for a class of multivalued complementarity problems”, *ESAIM, Control Optimization and Calculus of Variations*, **12** No 2 (2006), 271–293 (with Rubén López).
30. “Characterization of the nonemptiness and compactness of solution sets in convex and nonconvex vector optimization”, *J. Optimization Theory and Applications*, **130** No 2 (2006), 185–207 (with Cristián Vera).
31. “An optimal alternative theorem and applications to mathematical programming”, *J. of Global Optimization*, **37** No 2 (2007), 229–243. (with Nicolas Hadjisavvas and Cristián Vera).
32. “Characterizing efficiency without linear structure: a unified approach”, *J. of Global Optimization*, **41** No 1 (2008), 43–60. (with E. Hernández and V. Novo).
33. “Weak efficiency in multiobjective quasiconvex optimization on the real-line without derivatives” (with Cristián Vera). *Optimization*, In press.
34. “Strict efficiency in set-valued optimization”, (with Bienvenido Jiménez). *SIAM J. Control and Optimization*, accepted for publication.

Papers to appear in international refereed journals:

Monographs/Books:

35. “Optimización y Cálculo de Variaciones sin convexidad: Una Introducción”, Series Monografías del *Instituto de Matemáticas y Ciencias Afines* (I.M.C.A.), 109 pages, Lima-Perú, 1999.

Papers published in national refereed journals:

36. “Duality in Non-convex Optimization” (In spanish), *Actas of the Third Congress of Mathematics Capricornio, (COMCA’93)*, Antofagasta-Chile (17 pages).

37. "A constructive method for selections from the subdifferential of a convex function" (In Spanish), *Memorias del IV Encuentro de Matemática y sus Aplicaciones* (1994), pp. 167-180. Escuela Politécnica Nacional, Quito-Ecuador.
38. "Existence and non-existence in the Calculus of Variations" (Plenary Conference), *Memorias del LXVI Encuentro Sociedad de Matemática de Chile* (Valparaiso-Chile, October 28-29, 1994), pp. 02-11.
39. "El Rol de la Convexidad en Elasticidad Finita", *Revista de la Facultad de Ciencias U.N.I.* (Lima-Perú), **1** No 1 (1995), 11-15.
40. "An introduction to the Calculus of Variations: the direct method and an indirect one" (In Spanish), *Revista de la Facultad de Ciencias U.N.I.* (Lima-Perú), **2** No 2 (1996), 12-30.
41. "A Liapunov-type result in the Calculus of Variations" (In Spanish), *Revista de la Facultad de Ciencias U.N.I.* (Lima-Perú), **4** No 1 (1999), 41-59 (with V. Briceño).
42. "Variational problems in Economics" (In Spanish), *Revista de Física y Matemática* (FISMAT) de la Facultad de Ciencias, Escuela Politécnica Nacional (Quito-Ecuador), **VII** No 1 & 2 (1999), 90-114.

Papers submitted (in preparation) to refereed journals:

43. "Computing the value of information in quadratic decision problems and its non-negative conditions", *Preprint D.I.M. 2008-06*, Universidad de Concepción, 2008 (Sigifredo Laengle). *Submitted.*
44. "Asymptotically bounded multifunctions and the MCP beyond copositivity", (2008) *Submitted.*

#### CONTRIBUTIONS AT INTERNATIONAL MEETINGS

- \* "Radially Symmetric Solutions for a Class of Non-convex Problems in the Calculus of Variations", presented at *1<sup>st</sup> European Conference on Elliptic and Parabolic Problems* Pont-à-Mousson France, June 17-21, 1991.
- \* "Radial Solutions for some Classes of Non-convex Problems in the Calculus of Variations", presented at *International Conference of Differential Equations EQUADIFF'91*, Barcelona-Spain, August 26-31, 1991.
- \* "The Lack of Lower Semicontinuity in the Calculus of Variations", presented at *First Chilean-CEE School on Optimization and Third Franco-Latinoamerican Conference in Applied Mathematics*, Santiago-Chile, August 1992.
- \* "Applications of a duality theory in non-convex optimization", Invited conference at *Seminario en Optimización Matemática*, Universidad Nacional de Ingeniería, Lima-Perú, July 5-9, 1993.
- \* "Duality in non-convex optimization" (in Spanish), Invited minicourse (a series of three lectures) delivered in occasion of the *III Congreso de Matemática Capricornio (COMCA)*, Antofagasta-Chile, August 4-7, 1993.
- \* "El rol de la convexidad en elasticidad finita", Invited conference delivered in occasion of the *VII Coloquio Peruano de Física Matemática*, Lima-Perú, August 1993.
- \* "A constructive method for selections from the subdifferential of a convex function" (In Spanish), Invited conference delivered in occasion of the *IV Encuentro de Matemáticas y sus*

*Aplicaciones*, Facultad de Ciencias, Escuela Politécnica Nacional (EPN), Quito-Ecuador, July 04-08, 1994.

- \* “ $C^1$ -selections from the subdifferential of a convex function”, presented at *International Congress of Mathematicians*(ICM1994), E.T.H. Zürich-Switzerland, August 3-11, 1994.
- \* “Existence and non-existence in the Calculus of Variations” (In Spanish), Plenary conference delivered in occasion of the *LXVI Encuentro Nacional de la Sociedad de Matemática de Chile*, Valparaíso-Chile, October 28-29, 1994.
- \* “An Introduction to the Calculus of Variations” (In Spanish), Invited minicourse (a serie of three lectures) delivered in occasion of the *IX Jornadas de Matemática de la Zona Sur*, Chillán-Chile, April 26-28, 1995.
- \* “Some Non-convex symmetric problems in the Calculus of Variations”, Invited conference delivered at *2do. Seminario en Matemática Aplicada y Optimización*, Facultad de Ciencias, Universidad Nacional de Ingeniería, Lima-Perú, October 02-05, 1995.
- \* “Subdifferentiability with respect to the continuous functions”, Invited conference delivered at *2das. Jornadas Catalanas de Matemática Aplicada*, Four Solaise, Font Romeu-Odeillo, France, November 29 - December 01, 1995.
- \* “Simplified Global Optimality Conditions for Differences of Phi-convex Functions”(with J.E. Martinez-Legaz), talk delivered at *V Symposium on Generalized Convexity and its Applications*, CIRM-Luminy, Marseille-France, June 17-21, 1996.
- \* “Some remarks on the Ekeland variational principle” (In Spanish), Invited conference delivered in occasion of the *V Encuentro de Matemáticas y sus Aplicaciones*, Facultad de Ciencias, Escuela Politécnica Nacional (EPN), Quito-Ecuador, July 22-26, 1996.
- \* “Una Introducción al Cálculo de Variaciones y aplicaciones en Elasticidad Finita”, Invited minicourse (a series of three lectures) delivered in occasion of the *Seminario Nacional de Aplicaciones de la Matemática*, Facultad de Ciencias Naturales y Formales, Universidad Nacional de San Agustín, Arequipa-Perú, October 14-18, 1996.
- \* “An attempt to define the conjugate of set-valued maps and related properties”, Invited talk delivered within the cluster session (also Chairman) *Generalized convexity* at *XVI International Symposium on Mathematical Programming*, EPFL, Lausanne-Switzerland, August 24-29, 1997.
- \* “Minimizing integral functionals via Lyapunov-type theorems”, Invited minicourse (a series of three lectures) delivered at *3er. Seminario Internacional en Matemática Aplicada y Optimización*, Facultad de Ciencias, Universidad Nacional de Ingeniería, Lima-Perú, October 06-10, 1997.
- \* “Un resultado del tipo Lyapunov en Cálculo de Variaciones” (with V. Briceño), talk delivered in occasion of the *LXIX Encuentro Nacional de la Sociedad de Matemática de Chile*, Olmué-Chile, October 24-25, 1997.
- \* “A variational problem in Mathematical Economics”, Invited conference delivered in occasion of the *Inauguration* of the *Instituto de Matemática y Ciencias Afines* (IMCA), Universidad Nacional de Ingeniería, Lima-Perú, December 08-12, 1997.
- \* “Optimal solutions to some variational problems in Consumer theory” (In Spanish), Invited conference delivered in occasion of the *VI Encuentro de Matemáticas y sus Aplicaciones y Cuarta Escuela Andina de Ecuaciones Diferenciales*, Facultad de Ciencias, Escuela Politécnica Nacional (EPN), Quito-Ecuador, July 06-10, 1998.

- \* “Optimal solutions to some variational problems arising in Economics”, presented at *International Congress of Mathematicians (ICM1998)*, T.U. Berlin, Berlin-Germany, August 18-27, 1998.
- \* “Optimal planning to variational problems arising in Economics”, Invited talk delivered in occasion of the *5ème Congrès Franco-Latinoaméricain de Mathématiques Appliquées*, Universidad de Chile, Departamento de Ingeniería Matemática, Santiago-Chile, December 15-18, 1998.
- \* Chairman of the special session “Optimization and Calculus of Variations” and Invited conference “Pseudomonotone equilibrium problems and calculus of variations” delivered in occasion of the *IX Congreso de Matemática Capricornio (COMCA)*, Antofagasta-Chile, August 04-07, 1999.
- \* “Simplified optimality conditions for a difference of vector-valued functions”, Contributed talk at (also Chairman) *VI International Symposium on Generalized Convexity/Monotonicity*, Karlovassi, Samos-Greece, August 30-September 3, 1999.
- \* “Noncoercive generalized equilibrium problems: the quasiconvex case”, Invited conference delivered at *4to. Seminario Internacional en Matemática Aplicada y Optimización*, Facultad de Ciencias, Universidad Nacional de Ingeniería, Lima-Perú, October 04-08, 1999.
- \* “The conjugate of set-valued maps and related properties”, Invited conference delivered at *4to. Seminario Internacional en Matemática Aplicada y Optimización*, Facultad de Ciencias, Universidad Nacional de Ingeniería, Lima-Perú, October 04-08, 1999.
- \* “Non-coercive vector equilibrium problems: existence of solutions”, Contributed talk at *French-German-Italian Conference on Optimization*, Université Montpellier II, Montpellier-France, September 04-08, 2000.
- \* “A unified approach in optimization theory” (In Spanish), Invited conference delivered in occasion of the *LXXII Encuentro Nacional de la Sociedad de Matemática de Chile*, Punta de Tralca-Chile, October 26-28, 2000.
- \* “The equilibrium problem and variational problems”, Invited lectures (two) delivered at the *Summer School*, Facultad de Ciencias Físicas y Matemáticas, Universidad de Concepción, Concepción-Chile, January 08-19, 2001.
- \* “Two variational problems in consumption theory”, Invited talk delivered in occasion of the *XV Jornadas de Matemática de la Zona Sur*, Universidad de Concepción, Concepción-Chile, April 26-28, 2001.
- \* “Existence in convex vector optimization problems and optimality conditions in non-convex set-valued minimization” Contributed lecture at *XXXIV Workshop on Optimization and Control with Applications*, Erice-Italy, July 09-17, 2001.
- \* “A unifying approach in optimization theory and applications”, Invited lecture delivered at *Tenth International Colloquium on Numerical Analysis and Computer Science with Applications*, Plovdiv-Bulgaria, August 12-17, 2001.
- \* “Variational problems in mathematical economics”, Plenary Conference delivered at *XIX Coloquio Nacional de Matemática*, Universidad Nacional de Trujillo, Trujillo-Perú, November 05-10, 2001.
- \* “Existence theory for finite dimensional equilibrium problems”, Invited mini-course (two lectures) delivered at *XIX Coloquio Nacional de Matemática*, Universidad Nacional de Trujillo, Trujillo-Perú, November 05-10, 2001.

- \* “Radial epiderivatives and recession functions in non-convex vector optimization”, Invited talk delivered in occasion of the *6ème Congrès Franco-Latinoaméricain de Mathématiques Appliquées*, Universidad de Chile, Center for Mathematical Modeling, Santiago-Chile, December 17-21, 2001.
- \* “Vector optimization problems: existence of solutions and optimality conditions”, Plenary Conference delivered in occasion of the *XVI Jornadas de Matemática de la Zona Sur*, Universidad Católica del Maule, Talca-Chile, April 26-28, 2002.
- \* “Characterizations of the existence of solutions for a class of non-convex vector optimization problems”, Invited lecture delivered at *International Conference on Optimization and Optimal Control*, Mongolian State University and Center of Science and Culture of the Mongolian Academy of Sciences, Ulaanbaatar-Mongolia, August 13-17, 2002.
- \* “Characterizations of the non-emptiness/compactness of the solution set to equilibrium problems”, presented at *International Congress of Mathematicians (ICM2002)*, Beijing International Convention Center, Beijing-China, August 20-28, 2002.
- \* “On a class of non-convex vector optimization problems”, Invited lecture delivered at *International Symposium of Mathematics* within the Special Sesion on *Optimization and Calculus of Variations*, Universidad de Magallanes, Punta Arenas-Chile, November 12-15, 2002.
- \* (with D. Carrasco) “Representation of the  $\varepsilon$ -subdifferential for a class of non-convex/convex functions”, Invited lecture delivered at *International Symposium of Mathematics* within the Special Sesion on *Optimization and Calculus of Variations*, Universidad de Magallanes, Punta Arenas-Chile, November 12-15, 2002.
- \* “Radial epiderivatives and optimality conditions in non-convex scalar/vector optimization”, Plenary conference delivered at *6to. Seminario Internacional en Matemática Aplicada y Optimización*, Instituto de Matemática y Ciencias Afines (IMCA), Universidad Nacional de Ingeniería, Lima-Perú, October 06-10, 2003.
- \* ”On a non-convex variational problem of the Laplacian” talk delivered in occasion of the *LXXV Encuentro Nacional de la Sociedad de Matemática de Chile* within the Spacial Sesion *Optimization*, Vicuña-Chile, 30-31 October and 1st November, 2003.
- \* (with C. Vera) “An optimal 2D alternative theorem and nonconvex optimization problems”, presented at *V Brazilian Workshop on continuous optimization*, Florianopolis-Brasil, March 22-25, 2004.
- \* (with R. López) “Asymptotic analysis, existence and sensitivity results for linear complementarity problems”, Contributed lecture at *12th French-German-Spanish Conference on Optimization*, Université de Avignon, Avignon-France, September 20-24, 2004.
- \* (with C. Vera) ”Computing the weakly Pareto minima for bicriteria quasiconvex mappings on the real-line without derivative” talk delivered in occasion of the *LXXVI Encuentro Nacional de la Sociedad de Matemática de Chile* within the Special Sesion *Optimization*, Olmué-Chile, 28-30 October, 2004.
- \* ”A basic theory of multivalued complementarity problems”, Plenary Conference at *V Italian - Latin American Conference on Applied and Industrial Mathematics (ITLA 2004)* (15-18 Diciembre, 2004), Universidad Nacional de Trujillo, Trujillo - Perú.
- \* “Is it really a drawback the convexity in optimization ?”, talk delivered in occasion of the *6ème Congrès Franco-Latinoaméricain de Mathématiques Appliquées*, Universidad de Chile, Center for Mathematical Modeling, Santiago-Chile, January 14-18, 2005.

- \* “Weak efficiency in convex and quasiconvex vector minimization”, Plenary conference delivered at *7mo. Seminario Internacional en Matemática Aplicada y Optimización*, Instituto de Matemática y Ciencias Afines (IMCA), Universidad Nacional de Ingeniería, Lima-Perú, October 03-07, 2005.
- \* “Weak efficiency in multiobjective quasiconvex minimization”, Plenary Conference delivered at *III Congreso Internacional de Matemática Aplicada y Computacional (CIMAC III)*, Universidad Nacional del Callao, Facultad de Ciencias Naturales y Matemática, Callao-Perú, January 30 - February 04, 2006.
- \* “Asymptotic analysis for equilibrium and multivalued complementarity problems beyond copositivity and positive homogeneity”, contributed lecture delivered at *VIEW’s on Differential Equations (VIEW’s 2006)*, Universidad de Aveiro, Departamento de Matemática Aplicada, Aveiro-Portugal, 21 - 24 June, 2006.
- \* “Asymptotically bounded multifunctions and the MCP beyond copositivity and positive homogeneity”, presented at *International Congress of Mathematicians (ICM2006)*, Palacio Municipal de Congresos, Madrid-Spain, August 22-30, 2006.
- \* “Asymptotically bounded multifunctions and the multivalued complementarity problem”, Invited conference delivered in occasion of the *Inauguration* of the Building of the *Instituto de Matemática y Ciencias Afines* (IMCA), Universidad Nacional de Ingeniería, Lima-Perú, December 04-09, 2006.
- \* “Weak efficiency in convex and quasiconvex vector optimization problems”, invited talk within the Stream session “Vector and Set-valued Optimization” at *22nd European Conference on Operational Research (EURO XXII 2007)*, University of Economics, Prague-Czech Republic, 08 - 11 July, 2007.
- \* “Characterizing efficiency without linear structure”, invited conference delivered in *7mo. Seminario Internacional en Matemática Aplicada y Optimización*, Instituto de Matemática y Ciencias Afines (IMCA), Universidad Nacional de Ingeniería, Lima-Perú, 01-05 October, 2007.
- \* “Multivalued complementarity problems with asymptotically bounded multifunctions”, invited talk at *VI Journées Franco-Chiliennes d’Optimisation*, Université Sud Toulon-Var, Toulon-France, May 19-21, 2008.
- \* “An optimal alternative theorem and quasiconvex multiobjective optimization”, Plenary Conference at *XI Encuentro de Matemática y sus Aplicaciones*, Escuela Politécnica Nacional, Quito-Ecuador, July 07-11, 2008.
- \* “Overview on generalized convexity and vector optimization”, Lecturer of two sessions at (also Chairman) *2nd Summer School on Generalized Convex Analysis: Introduction to Theory and Applications*, Department of Applied Mathematics, National Sun Yat-sen University, Kaoshiung-Taiwan, July 15-19, 2008.
- \* “Asymptotically bounded multivalued complementarity problems”, Contributed talk at (also Chairman) *IX International Symposium on Generalized Convexity/Monotonicity*, Department of Applied Mathematics, National Sun Yat-sen University, Kaoshiung-Taiwan, July 21-25, 2008.
- \* “Convexity behind the non-convexity in optimization”, Plenary Conference at *IV International Congress of Computational and Applied Mathematics*, Facultad de Ciencias Físicas y Matemáticas, Universidad Nacional Pedro Ruiz Gallo, Lambayeque-Perú, September 15-19, 2008.

- \* “Convexity behind the nonconvexity in Optimization”, invited talk at *Workshop on Variational Analysis*, Departamento de Ingeniería Matemática - CMM, Universidad de Chile, Santiago-Chile, November 10-13, 2008.

#### INVITED TALKS AT SCIENTIFIC INSTITUTIONS

- \* “Radially symmetric solutions for a class of nonconvex problems in the Calculus of Variations”, talk delivered at SISSA, Trieste-Italy, March 13, 1991.
- \* “Resultados de Existencia y no existencia en Cálculo de Variaciones”, invited minicourse (a series of three lectures) delivered at Universidad de Santiago de Chile, Facultad de Ciencias, Departamento de Matemáticas y Ciencias de la Computación, Santiago-Chile, September 1992.
- \* “Una teoría de Dualidad no convexa”, invited conference delivered at Facultad de Ciencias Físicas y Matemáticas, Universidad Nacional de La Libertad, Trujillo-Perú, Febrero 1993.
- \* “Algunos tópicos en Ecuaciones Diferenciales Ordinarias, Sistemas Dinámicos y Cálculo de Variaciones”, invited minicourse (a series of five lectures) delivered at Universidad Nacional de Piura, Piura-Perú, Abril 1993.
- \* “Algunas reflexiones sobre el problema de minimización en el Cálculo de Variaciones”, invited talk delivered at Universidad Católica de la Santísima Concepción, Concepción-Chile, Julio 1994.
- \* “Lower perturbations for some classes of non-convex integrals”, invited talk delivered at SISSA, Trieste-Italy, January 10, 1995.
- \* “Sul problema di non esistenza di minimo per una classe di funzionali con integrando non-convesso”, invited talk delivered at Dipartimento di Matematica Pura ed Applicata, Università di Padova, Padova-Italy, February 01, 1995.
- \* “El Teorema de Liapunov: Variantes y Aplicaciones”, invited talk delivered at Departamento de Ingeniería Matemática, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile, Santiago-Chile, October 25, 1995.
- \* “Non-convex integrands in the Calculus of Variations”, invited minicourse (a series of three lectures) delivered at Departament de Matemàtica Aplicada i Anàlisi, Universidad de Barcelona, Barcelona-Spain, November 22-24, 1995.
- \* “Algunas reflexiones en el Cálculo de Variaciones”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, May 08, 1996.
- \* “Remarks on the Ekeland variational principle and related properties”, invited talk delivered at SISSA, Trieste-Italy, June 26, 1996.
- \* “Aproximación numérica en el Cálculo de Variaciones”, invited talk delivered at Facultad de Ciencias, Universidad Nacional de Ingeniería (UNI), Lima-Perú, July 19, 1996.
- \* “De la geometría de los espacios de Banach a la teoría de optimización”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, May 14, 1997.
- \* “Un problema variacional en teoría del consumidor”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, November 12, 1997.

- \* “Optimización y Cálculo de Variaciones sin convexidad: una introducción”, invited course delivered at the *Instituto de Matemática y Ciencias Afines* (IMCA), Lima-Perú, January 04 - 29, 1999.
- \* “Problemas de minimización no-coercivos”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, June 28, 2000.
- \* “Existence in scalar/vector convex optimization and optimality conditions in non-convex set-valued minimization”, invited lecture delivered at *Centre for Mathematical Modeling*, Universidad de Chile, Santiago-Chile, July 05, 2000.
- \* “Non-coercive problems in optimization: theory and application”, invited talk delivered at *Centre for Mathematical Modeling*, Universidad de Chile, Santiago-Chile, November 27, 2000.
- \* “An existence theory for equilibrium problems”, invited talk delivered at SISSA, Trieste-Italy, January 23, 2002.
- \* “Recession analysis and minimization problems”, invited talk delivered at Department of Mathematics, Aligarh Muslim University, Aligarh-India, February 08, 2002.
- \* “An introduction to the Calculus of Variations”, invited talk delivered at Department of Mathematics, Aligarh Muslim University, Aligarh-India, February 09, 2002.
- \* “Star-shaped vector functions and non-convex vector optimization”, invited talk delivered at *Centre for Mathematical Modeling*, Universidad de Chile, Santiago-Chile, May 29, 2002.
- \* “Variational problems arising in mathematical economics”, invited talk delivered at *Departamento de Matemática*, Universidad de Aveiro, Aveiro-Portugal, April 23, 2003.
- \* “The vector Weierstrass theorem and generalized quasiconvex vector optimization”, invited talk delivered at *Dipartimento di Statistica*, Università degli Studi di Milano-Bicocca, Milan-Italia, July 17, 2003.
- \* “Existence theory for non-coercive pseudomonotone equilibrium problems”, invited talk delivered at *Dipartimento di Sistemi ed Istituzioni per l'Economia*, Università degli Studi di L'Aquila, L'Aquila-Italia, July 21, 2003.
- \* “An overview of vector optimization and game theory”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, 1st October, 2003.
- \* “Un problema variacional dependiente del Laplaciano y análisis numérico”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, June 23, 2004.
- \* “De la Optimización a la Teoría de Juegos”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, September 28, 2005.
- \* “De la Optimización a la Teoría de Juegos Nocooperativos: un recuento interesante”, conference delivered within the *Ceremonia de Incorporación*, Academia Nacional de Ciencia y Tecnología (ANCyt), Lima-Perú, October 06, 2005.
- \* “Weak efficiency in convex and quasiconvex vector minimization: existence and optimality conditions”, a series of fourth lectures delivered at *Departamento de Matemática Aplicada*

I, Escuela Técnica Superior de Ingeniería Industriales, Universidad Nacional de Educación a Distancia, Madrid-Spain, 07, 08, 14, 15 November, 2005.

- \* “A unified approach for linear complementarity problems”, invited talk delivered at *Departamento de Matemática Aplicada I*, Escuela Técnica Superior de Ingeniería Industriales, Universidad Nacional de Educación a Distancia, Madrid-Spain, 19 June, 2006.
- \* “A general existence theory and sensibility for multivalued complementarity problems”, invited talk delivered at *Departamento de Matemática Aplicada I*, Escuela Técnica Superior de Ingeniería Industriales, Universidad Nacional de Educación a Distancia, Madrid-Spain, 16 Julio, 2007.
- \* “Efficiency and weak efficiency in vectorial optimization”, invited talk at *Area Ciencias Básicas*, Facultad de Ingeniería, Universidad Católica de la Santísima Concepción, Concepción-Chile, 16 Octubre, 2007.
- \* “Asymptotically bounded multifunctions and MCP beyond copositivity”, invited seminar at *Analyse Nonlineaire et Optimisation Seminaire*, Département de Mathématique, Université d’Avignon, Avignon-France, 22 May, 2008.
- \* “Optimization multiobjetivo y convexidad escondida”, talk delivered within the *Colloquium* of the Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción-Chile, August 20, 2008.

#### INVITED VISITING RESEARCHER

International Centre for Theoretical Physics (ICTP), Trieste - Italy:

- October 02 - October 30, 1993.
- August 12 - August 18, 1994.
- October 21 - December 13, 1996.
- August 30 - September 06, 1997.
- August 27 - September 26, 1998: as an associate member.
- August 18 - August 24, 1999: as an associate member.
- August 19 - September 03, 2000: as an associate member.
- July 17 - August 31, 2001: as an associate member.
- July 30 - September 10, 2002: as an associate member.
- July 10 - August 21, 2003: as an associate member.
- September 09 - October 14, 2004: as an associate member.
- July 27 - September 11, 2005: as an associate member.

International School for Advanced Studies (ISAS/SISSA), Trieste - Italy:

- December 05, 1994 - February 28, 1995.
- June 22 - June 28, 1996.
- August 06 - August 15, 1998.
- January 07 - February 06, 2002.

Università di Padova, Dipartimento di Matematica Pura ed Applicata. Padova - Italy:

- January 31 - February 02, 1995.

Universidad Autónoma de Barcelona, Departament d’Economía i d’História Económica. Barcelona - Spain:

- November 20 - December 02, 1995.
- August 31 - September 10, 2006.

Laboratoire de Mathématiques pour l'Industrie et la Physique, U.F.R.-M.I.G. Université Paul Sabatier, Toulouse III, Toulouse - France:

- February 23 - March 22, 1998.

Instituto de Matemática y Ciencias Afines (IMCA), Lima-Perú:

- December 08 - 12, 1997.
- January 04 - 29, 1999.
- October 06 - 10, 2003.
- October 03 - 07, 2005.
- December 04 - 09, 2006.

Centre for Mathematical Modeling (CMM), Universidad de Chile, Santiago - Chile:

- July 05 - 07, 2000.
- May, 2002.
- October, 2004.
- January 11 - 18, 2005.
- January 18 - 19, 2006.

Universidad Nacional de Trujillo, Facultad de Ciencias Físicas y Matemáticas, Departamento de Matemáticas, Trujillo - Perú:

- November, 2001.
- December, 2004.

Aligarh Muslim University, Department of mathematics, Aligarh - India:

- February 07 - 11, 2002.

Universidad de Aveiro, Departamento de Matematica, Aveiro - Portugal:

- April 21 - 26, 2003.
- June 21 - 24, 2006.

Universita degli Studi di Milano-Bicocca, Dipartimento di Statistica, Milan - Italy:

- July 17 - 18, 2003.

Universita degli Studi di L'Aquila, Dipartimento di Sistemi ed Istituzioni per l'Economia, L'Aquila - Italy:

- July 19 - 23, 2003.

Universidad Nacional de Educación a Distancia, Departamento de Matemática Aplicada I, Madrid - Spain:

- November 02 - December 01, 2005.
- June 18 - 20, 2006.
- July 12 - 22, 2007.

Université d'Avignon, Département de Mathématique, Avignon - France:

- November 22 - 24, 2008.

National Sun Yat-sen University, Department of Applied Mathematics, Kaoshiung - Taiwan:

- July 15 - 25, 2008.

## RESEARCH PROJECTS(GRANTS)

- \* Researcher of the Project FONDEF DO5I-10211 (CONICYT-Chile): “Herramientas para la formación de Profesores de Matemática”, March 2007 - December 2009.
- \* Researcher of the Project FONDEF DO2I-1090 (CONICYT-Chile): “Estándares para la Formación en Ciencias de Profesores de Enseñanza Media” (Area de Matemática), March - October 2005.
- \* Researcher of the Project FONDAP-Matemáticas Aplicadas II (CONICYT), May 2000 - December 2010: “Optimization and Equilibria”.
- \* Researcher of the Project FONDAP (CONICYT), May 1997 - December 1999: “Optimization” being responsible of the sub-project “Non-classical variational problems”.
- \* Main researcher of the Project FONDECYT 107-0689 (CONICYT-Chile): “Further development in multivalued complementarity problems and vector optimization”, March 2007 - February 2010.
- \* Main researcher of the Project FONDECYT 706-0106 (International Co-operation) (CONICYT-Chile): “Non-convex vector optimization and mathematical programming: existence and optimality conditions”, March 2006 - February 2007.
- \* Main researcher of the Project FONDECYT 104-0610 (CONICYT-Chile): “Non-convex vector optimization and mathematical programming: existence and optimality conditions”, March 2004 - February 2007.
- \* Main researcher of the Project FONDECYT 101-0116 (CONICYT-Chile): “Further developments in convex/non-convex optimization theory”, March 2001 - February 2004.
- \* Main researcher of the Project FONDECYT 199-0348 (CONICYT-Chile): “Nonclassical problems in optimization theory and Calculus of variations”, March 1999 - February 2001.
- \* Main researcher of the Project FONDECYT 197-0931 (CONICYT-Chile): “Further developments in the Calculus of Variations and Optimization Theory”, March 1997 - February 1999.
- \* Main researcher of the Project FONDECYT 195-1148 (CONICYT-Chile): “Some problems in Optimization in the absence of the Convexity/Superlinearity condition”, March 1995 - February 1997.
- \* Researcher of the Project ECOS/CONICYT, January 1997 - December 1999: “Optimisation et Analyse non-linéaire” being responsible of the sub-project “Problèmes d’existence en calcul des variations”.
- \* Researcher in the “Interdisciplinary Research Group on Applied Mathematics”, Dirección de Investigación, Universidad de Concepción, April 2001 - December 2003.

## PRESENT AND PAST RELEVANT DUTIES

- \* Co-Chairs of *The 2009 International Symposium on Optimization, Theory and Applications* (April 24 - 26, 2009), Sanya, Hainan - China.
- \* Member of the International Scientific Committee to the *IV Congreso Internacional de Matemática Aplicada y Computacional (CIMAC IV)* (September 15 - 19, 2008), Universidad Nacional Pedro Ruiz Gallo, Facultad de Ciencias Físicas y Matemática, Lambayeque - Perú.

- \* Member of the International Scientific Program to the *IX International Symposium of Generalized Convexity and Monotonicity* (July 21 - 25, 2008), Department of Applied Mathematics, National Sun Yat-sen University, Kaoshiung - Taiwan.
- \* Member of the Mathematics Advisory Committee *National Commission of Sciences and Technology* (CONICYT - Chile) May 2006 - June 2009.
- \* Member of the Editorial Board of *Optimization* (ISI Journal, Taylor & Francis Ltd. United Kingdom) since January 2006.
- \* Member of the Editorial Advisory Board of *The Open Mathematics Journal* (Bentham Science Publishers) since November 2007.
- \* Member of the Editorial Committee of the Journal *Notas de Matemática*, a publication of the Sociedad de Matemática de Chile, January 2001 - December 2005.
- \* Corresponding Member of *Academia Nacional de Ciencia y Tecnología* (ANCyT), Lima - Perú, since March 2005.
- \* Honorary Associate Member of the *Sociedad Peruana de Matemática Aplicada y Computacional* (SPMAC), Lima - Perú, since February 2006.
- \* Member of the International Scientific Committee *Working Group on Generalized Convexity* (WGGC), 2006 - 2009; [www.genconv.org](http://www.genconv.org).
- \* Examiner of Ph.D. theses for the: Department of Mathematical Engineering (Universidad de Chile, Chile), May 2000, December 2004, May 2007; Department of Mathematics (Aligarh Muslim University, India), January 2004.
- \* Member of the International Scientific Committee to the *III Congreso Internacional de Matemática Aplicada y Computacional (CIMAC III)* (January 30 - February 04, 2006), Universidad Nacional del Callao, Facultad de Ciencias Naturales y Matemática, Callao - Perú.
- \* Member of the International Scientific Committee to the *1st Euro-Latin American Workshop on Engineering Systems (SELASI2005)* (26-30 April, 2005), Universidad Nacional de Trujillo, Trujillo - Perú.
- \* Member of the International Scientific Committee to the *Italian - Latin American Conference on Applied and Industrial Mathematics (ITLA 2004)* (15-18 December, 2004), Universidad Nacional de Trujillo, Trujillo - Perú.
- \* Member of the Scientific Committee and Chairman of the Special Sesion on "Optimization" to the *LXXVI Encuentro Nacional de la Sociedad de Matemática de Chile* (28-30 October, 2004), Olmué - Chile.
- \* Member of the Scientific Committee *LXXV Encuentro Nacional de la Sociedad de Matemática de Chile* (30-31 October and 1st November, 2003), Vicuña - Chile.
- \* Member of the Scientific Committee and Chairman of the Special Sesion on "Optimization and Calculus of Variations" to the *VI Simposio Internacional de Matemática*, Sociedad de Matemática de Chile (November 12-16, 2002), Universidad de Magallanes, Punta Arenas - Chile.
- \* Member of the Scientific Committee to the *XI Congreso Latino-Iberoamericano de Investigación de Operaciones (XI CLAIO)* (October 27-31, 2002), Facultad de Ingeniería, Universidad de Concepción, Concepción - Chile.

- \* Member of the Scientific Committee to the *5to Seminario Internacional en Optimización y Ciencias Afines* (October 01-05, 2001), Facultad de Ciencias, Universidad Nacional de Ingeniería (UNI) and Instituto de Matemática y Ciencias Afines (IMCA), Lima – Perú.
- \* Member of the Scientific Committee and Chairman of the Special Session on “Optimization and Calculus of Variations”, at *XV Jornadas de Matemática de la Zona Sur*, Concepción-Chile, April 26-28, 2001.
- \* President of the Organizing Committee and Director of the Summer School 2001, Facultad de Ciencias Físicas y Matemáticas, Universidad de Concepción, January 08-19, 2001.
- \* Director of Research and Postgraduate Sections, Facultad de Ciencias Físicas y Matemáticas, Universidad de Concepción, March 1999 – July 2001.
- \* Member of the Scientific Committee of the *Sociedad de Matemática de Chile*, January 2000 – December 2005.
- \* Member of the Scientific Committee to the *4to Seminario Internacional en Matemática Aplicada y Optimización* (October 04-08, 1999), Facultad de Ciencias, Universidad Nacional de Ingeniería (UNI), Lima - Perú.
- \* Member of the Organizing Committee to the *VI Encuentro de Matemáticas y sus Aplicaciones* and *Cuarta Escuela Andina de Ecuaciones Diferenciales* (July 06-10, 1998), Facultad de Ciencias, Escuela Politécnica Nacional (EPN), Quito - Ecuador.
- \* Member of the Scientific Committee to the *1er Encuentro Latino Iberoamericano de Optimización (I ELIO) - 2do Congreso Chileno de Investigación Operativa (OPTIMA 97)* (November 06-08, 1997), Facultad de Ingeniería, Universidad de Concepción, Concepción - Chile.
- \* Member of the Scientific Committee to the *3er Seminario Internacional en Matemática Aplicada y Optimización* (October 06-10, 1997), Facultad de Ciencias, Universidad Nacional de Ingeniería (UNI), Lima - Perú.
- \* Since 1995: Member of the Graduate Committee of the Doctorate Program in Applied Sciences of Mathematical Engineering, Departamento de Ingeniería Matemática, Universidad de Concepción, Chile.
- \* President of the Organizing Committee to the *Seminario en Optimización Matemática* (July 05-09, 1993), Facultad de Ciencias, Universidad Nacional de Ingeniería (UNI), Lima - Perú.
- \* Referee of papers submitted to (since 2000):
  - *Mathematics of Operations Research*;
  - *Mathematical Programming, Section A*;
  - *Mathematical Programming, Section B*;
  - *SIAM, J. on Control and Optimization*;
  - *SIAM, J. on Optimization*;
  - *Journal of Differential Equations*;
  - *Journal of Optimization Theory and Applications*;
  - *Journal of Global Optimization*;
  - *Optimization*;
  - *Positivity*;
  - *Mathematical Methods of Operations Research*;
  - *Journal of Convex Analysis*;
  - *European Journal of Operational Research*;

- *Journal of Mathematical Analysis and Applications*;
  - *RAIRO-Operations Research*;
  - *Mathematical and Computer Modelling*;
  - *Computers and Mathematics with Applications*;
  - *Information Sciences*;
  - *The Australian and New Zealand Industrial and Applied Mathematics Journal*;
  - *Annales des Sciences Mathématiques du Québec*;
  - *Proyecciones* (Universidad Católica del Norte).
- \* Referee of: *FONDECYT* research projects (CONICYT-Chile); ECOS-CONICYT projects; INRIA-CONICYT projects; Postdoctoral projects (CONICYT-Chile); Research projects from Argentina, Venezuela, Spain.
  - \* Referee of *INTERNAL* research projects: Universidad de Concepción; Universidad de Talca; Universidad Austral de Chile; Universidad de Magallanes.
  - \* Since 1995: Reviewer of the *Mathematical Reviews* AMS.
  - \* Since 2003: Reviewer of the *Zentralblatt MATH*.

#### MEMBER OF SCIENTIFIC SOCIETIES

- \* Since September 2008: Honorary Professor from *Universidad Nacional Pedro Ruiz Gallo*, Lambayeque - Perú.
- \* Since 2006: Honorary Associate Member of the *Sociedad Peruana de Matemática Aplicada y Computacional* (SPMAC), Lima - Perú.
- \* Member of the International Scientific Committee *Working Group on Generalized Convexity* (WGGC), 2006 - 2009; www.genconv.org.
- \* Corresponding Member of *Academia Nacional de Ciencia y Tecnología* (ANCyT), Lima - Perú, from 2005.
- \* Since 1999: Active member of the *American Mathematical Society*, U.S.A..
- \* Since 1998: Active member of the *Society for Industrial and Applied Mathematics*, U.S.A..
- \* Since January 1994: Active member (since January 2000: member of the Scientific Committee) of the *Sociedad de Matemática de Chile*.
- \* Since 1997: Active member of the *Working Group on Generalized Convexity*, within the *Mathematical Programming Society*.
- \* 1998–2005: Regular Associate member of the *Abdus Salam International Centre for Theoretical Physics*, Trieste - Italy.
- \* January 1996 to December 1998: Active member of the *New York Academy of Sciences*.

#### ADVISER OF THE FOLLOWING THESES

- \* at undergraduate level awarding the degree in *Mathematical Engineering*
- “*Algoritmos Numéricos para la Resolución del Problema del Regulador Lineal*”, Lorena Muñoz. December 1995.

- “*Selecciones regulares para el subdiferencial de una función convexa y aplicaciones*”, Victor Puchi. March 1997.
- “*Un resultado tipo Liapunov en Cálculo de Variaciones*”, Verónica Briceño. May 1998.
- “*Descomposición Aditiva de Funciones Cuasiconvexas y Aplicaciones en Optimización Multi-objetivo*”, Cristian Ivan Ramos Arrepol. En Progreso: inicio Noviembre 2007.

\* Master Thesis

- “*Vector equilibrium problems involving moving cones*”, Fernando Flores Bazán. Defended on November 30, 2001.
- “*On the representation of the  $\varepsilon$ - $\Phi$ -Subdifferential for a class on  $\Phi$ -convex functions with applications*”, Dante Carrasco Olivera. Defended on November 29, 2002.

\* Ph.D. Thesis

- “*Asymptotic Analysis in Equilibrium Problems*”, Rubén López Montoya, Degree awarded: Doctor en Ciencias Aplicadas c/m Ingeniería Matemática, Departamento de Ingeniería Matemática, U. de Concepción. Defended on January 07, 2005.
- “*Existence and Optimality Conditions in Nonconvex Vector Optimization*”, Cristián Vera Donoso, Degree awarded: Doctor en Ciencias Aplicadas c/m Ingeniería Matemática, Departamento de Ingeniería Matemática, U. de Concepción. Defended on March 15, 2006.