

## **Danielle GONDARD-COZETTE**

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## **Education and Diplomas**

Mathematical studies at "Ecole Normale Supérieure de Cachan" (1966-1970);  
« *Agrégation de Mathématiques* » (1969);  
« *Doctorate in Mathematics* », Université Paris-Sud (1973), advisor : Pierre Samuel;  
« *Docteur d'Etat ès Science* » (1989) in Mathematics (equivalent to H.D.R.), Université Paris 7,  
advisor : Gabriel Sabbagh.

## **Academic Career**

- Maître de Conférences Emeritus, IMJ-PRG - Sorbonne Université, since 2021;
- Maître de Conférences honoraire and bénévole, IMJ-PRG - UPMC, since 2009.
  
- Maître de Conférences hors-classe, Université Pierre et Marie Curie (1992-2009);
- Maître de Conférences Université Pierre et Marie Curie - Paris 6 (1985-1992);
- Maître-Assistante Université Pierre et Marie Curie - Paris 6 (1976-1985).
  
- Maître-Assistante Université de Bretagne Occidentale (1974-1976) ;
- Assistante Université de Bretagne Occidentale (1970-1974).
  
- Qualified University Professor in 1992, 1998 and 2003 : qualifications 9212511011, 9812583209, and 03125083209 ;
- Contracts for researches and advisor for doctorates (PEDR) : 1994-1998, 1999-2003 and 2004-2008;
- Contracts « collaboration bénévole » with UPMC/Sorbonne University since 2009.

# Mathematical Researches

## Research Interests :

- Real Algebra and Valuation Theory;
- Model Theory;
- Real Algebraic Geometry.

## International Cooperations :

- ***MathAmSud project (January 2023-December 2024)*** : Abstract theories of quadratic and hermitian forms, and real algebraic geometry. ATQHFRAG code 22-Math-11.
- Member of Executive Committee of international project (2017-2019) - International Council for Science (ICSU) : « *A Global Approach to the Gender Gap in Mathematical and Natural Sciences: How to Measure It, How to Reduce It?* ». <https://icsugendergapinscience.org/organization/executive-committee/>
- Cooperation on « *Positive Polynomials and Applications* », University Paris 6 – University of Saskatchewan, Canada, 2006-2011 ;
- European network (“Improving Human Research Potential”), MODNET, “*Model Theory and applications*” 2004-2008 ;
- European network (“Improving Human Research Potential”), RAAG, « *Real Algebraic and Analytic Geometry* » 2002-2006 ;
- Coopération on « *Théorie des Valuations et Applications* », University Paris 6 – University of Saskatchewan, Canada, 1999-2004 ;
- Cooperation France-Germany, program PROCOPE 1989-1994, 1997-1999 ;
- European network ( « Human Capital and Mobility ») « *Real Algebraic and Analytic Geometry* » 1994-1997.
- European network ( « Human Capital and Mobility ») « *Model Theory and Applications* » 1993-1996 ;
- Member of Executive Committee of international project (2017-2019) - International Council for Science (ICSU) : « *A Global Approach to the Gender Gap in Mathematical and Natural Sciences: How to Measure It, How to Reduce It?* ».

## Séminar, Editions :

- Editor for volume **Contemporary Mathematics 697**, *Ordered Algebraic Structures and Related Topics*, (2017).
- Co-direction of seminar « ***Structures Algébriques Ordonnées*** » with F. Delon and M. Dickmann since 1984. <http://semsao.imj-prg.fr>
- Editor of proceedings of our seminar *Structures Algébriques Ordonnées* since 1984.
- Editor for the proceedings of "Congrès Mathématique Junior" published in « *Quadrature* », numéro 16, (1993).
- Reviews for American Mathematical Society since 1992, and for Zentralblatt für Mathematik since 1995.
- Editor for ***The Rocky Mountain Journal of Mathematics***, fall 1984, volume 14, #4.
- Editor for volumes 32 and 33 "***Publications Mathématiques de l'Université Paris 7***" (1990).

## Meeting Organizer.

- Member of the organizing committee of the international conference « **DDG40: Ordered Algebraic Structures** », **August 3-9 2025, Banyuls-sur-mer.**  
<https://DDG40.sciencesconf.org>
- Organizer of special day **March 20 2018, Institut Henri Poincaré.** meeting held to celebrate the 90th birthday of **Paulo Ribenboim.**  
<http://modvac18.math.ens.fr/Ribenboim.html>
- Member of the organizing committee of the international conference « **Ordered Algebraic Structures and Related Topics** », conference 1155 - **CIRM (Luminy), October 12-16 2015.**  
[scientific-events.weebly.com/1155.html](http://scientific-events.weebly.com/1155.html)
- Co-organizer for *Journées en l'honneur de Max Dickmann*, Institut de mathématique de Jussieu - Equipe de Logique, **june 24-25 2007.**
- Member of the organizing committee, with M. Coste and M. Dickmann, for **Special Trimester on «Real Geometry» Centre Emile Borel**, Institut Henri Poincaré in Paris, held **fall 2005.**
- *Congrès Mathématique Junior*, Cité des Sciences de La Villette, **July 1992**, linked to the first Congrès Mathématique Européen; editor of the special issue of "Quadrature".
- Member of the organizing committee of the **AMS meeting special session on « Ordered Fields and Real Algebraic Geometry »**, **Boulder (Colorado,U.S.A.) en 1983.**

## Administration and Scientific Responsibilities

- Member of "Comité Parité", IMJ-PRG since 2017
- Delegate of UPMC in Comité de Direction of Institut Emile du Chatelet since 2010.
- Member of "*Conseil National des Universités*", section 25th, 2003-2009.
- Scientific responsibility for University Paris 6 in diploma "*Equal opportunities for women and men*", created in 2004 (Universities Paris III and Paris 6) supported by "Délégation Régionale aux droits des Femmes et à l'Egalité d'Ile de France" and "Fonds Social Européen".
- Vice-president of "*Commission de spécialistes*" 25th section, University Pierre et Marie Curie (Paris VI), 1992-1998.
- Member of "*Commission group V*" (sections 25, 26 et 27) University Pierre et Marie Curie, 1992-1999.
- Création and realization of the printed presentation of UFR 920, University Paris 6.

- Member of "*Commissions de spécialistes*" : University of Versailles-Saint Quentin en Yvelines (1992-1995), University of Nantes (1993-1999), University of Maine (1998-2001).

## University Teaching Experience

**Member of the selection board for "Ecole Normale Supérieure" (Ulm), 2018.**

### Courses

- "*On valuation fans in Real Fields*", course for trimester *Real Geometry* held Emile Borel Institute Fall 2005, IHP Paris.
- "*Femmes et sciences*" in diploma "*Equal opportunities for women and men*", since 2004, and then for "*Conseiller, conseillère référent-e égalité femmes/hommes*" since January 2009.
- Licence SCM, courses LM 120 and LM 125, section IPCM, since 1992.
- Various courses in "Licence" and "Maîtrise" of Mathematics (1976-1992) : Topology, Complex Functions,....
- DEUG second year MP (1976-1992).
- Licence by mail, University Paris 6, Topology (1979-1981).
- Courses for high school teachers, IREM de Brest (1974-1976)
- First year courses in mathematics, University of Bretagne Occidentale (1970-1974).

**Member of the selection board for "Ecole Normale Supérieure de Cachan", (1971-1986).**

**Scientific responsibility** for University Paris 6 in diploma "*Equal opportunities for women and men*", created in 2004 (Universities Paris III and Paris 6) supported by "Délégation Régionale aux droits des Femmes et à l'Égalité d'Ile de France" and "Fonds Social Européen".

## Societies and distinctions

Member of *Société Mathématique de France* since 1974.

Member of *American Mathematical Society* 1985-2010.

Member of association *Femmes et Mathématiques* since its creation 1987.

Member of *Association Française des Femmes Diplômées des Universités* since 1992.

Member of association *Femmes et Sciences* since its creation in 2000.

**"Chevalière" in "Ordre National du Mérite"** (attribution on October 2<sup>nd</sup> 2003 by Claudine Hermann, professor at Ecole Polytechnique).

Member of **Association Nationale des Membres de l'Ordre National du Mérite** depuis 200

## Mathematical research publications

[33] *Marshall's problem revisited*, manuscript in preparation.

[32] *Nombre de composantes connexes d'une variété réelle et  $\mathbf{R}$ -places*, J. of Pure and Abstract Algebra 2020, <https://doi.org/10.1016/j.jpaa.2020.106611>; edited by Saugata Basu, Cordian Riener, Marie-Françoise Roy ; Volume 225, Issue 7 , July 2021.

[31] *The Space of Valuation Fans and Admissible  $P$ -Structures*, in séminaire « Structures Algébriques Ordonnées », Preprints Paris 7 - Logique # 94, Février 2021.

[30] *Note on Artin's solution for Hilbert's 17th problem and The Stengle Nullstellenstaz*, manuscripts in preparation for "*Sources for Real Geometry*", collective book in preparation.

[29] *On valuation fans and the real holomorphy ring*, in Séminaire Structures Algébriques Ordonnées, Preprints Paris 7- Logique # 91, Mai 2017.

[28]  *$\mathbf{R}$ -places and related topic*, in « *Valuation Theory in Interaction* », Antonio Campillo (Valladolid, Spain), Franz-Viktor Kuhlmann (University of Saskatchewan, Canada) and Bernard Teissier (IMJ, Paris, France) editors, Series of Congress reports, E.M.S., 2014.

[27] *Real Holomorphy Rings and the Complete Real Spectrum*, written with Murray Marshall, **Annales de la faculté des sciences de Toulouse**, Mathématiques, tomes XIX, n° SI, p.57-74, 2010.

[26] *On some elementary fields theories*, in "**Structures Algébriques Ordonnées**", #78, February 2006.

[25] *Real holomorphy rings and the complete real spectrum*, written with M. Marshall, in "**Structures Algébriques Ordonnées**", #76, April 2004.

[24]  *$\mathbf{R}$ -places : résultats et problèmes ouverts*, in "**Structures Algébriques Ordonnées**", #75, Mai 2003.

[23] *Towards an abstract description of the space of real places*, written with M. Marshall, in Real Algebraic Geometry and Ordered Structures, C. Delzell et J. Madden eds., **Co. Math.**, vol. 253, AMS, 77-113, 2000.

[22] *Valuation fans and residually real-closed henselian fields*, written with avec E. Becker and R. Berr, **Journal of Algebra** 215, 574-602, 1999.

[21] *Notes on the space of real places of a formally real field*, written with E. Becker, in proceedings "**Real Analytic and Algebraic Geometry**" Trento (Sept.92) ; F. Broglia, M. Galbiati, A. Tognoli eds. ; publié par W. de Gruyter, Berlin New-York, 21-46, 1995.

[20] *Hilbert's 17th problem for sums of  $2n$ th powers*, written with E. Becker and R. Berr (Dortmund) and F. Delon (Paris7), **Journal für die reine und angewandte Mathematik** , 450, 139-157, 1994.

[19] *Sur les ordres de niveau  $2n$  et sur une extension du 17ème problème de Hilbert*, in "Real Algebraic Geometry" (M. Coste, L. Mahé, M.-F. Roy eds.), **Lecture Notes in Math** #1524, Springer-Verlag, 257-266, 1992.

- [18] *17ème problème de Hilbert sur les corps chaîne-clos*, written with Françoise Delon, **Journal of Symbolic Logic**, vol. 56, # 3, 853-861, 1991.
- [17] *Axiomatisations simples des théories des corps de Rolle*, **Manuscripta Mathematica**, 69, Springer-Verlag, 267-274, 1990.
- [16] *17ème problème de Hilbert et résultats récents*, in « **Structures Algébriques Ordonnées** », Vol. II, Publications Mathématiques de l'Université Paris 7, Vol. 33, 21-49, 1990.
- [15] *Théorie des ordres de niveau supérieur et corps chaîne-clos*, in « **Structures Algébriques Ordonnées** » Vol. I, Publications Mathématiques de l'Université Paris 7, Vol. 32, 37-63, 1990.
- [14] *Chainable fields and real algebraic geometry*, in "**Real Algebraic and Analytic Geometry**", (Trento, 1988) Lecture Notes in Math. # 1420, Springer-Verlag, 128-148, 1990.
- [13] *Théorie des modèles de corps ordonnables et sommes de puissances  $2n$ -èmes*, **Thèse de Doctorat d'Etat**, Université Paris 7, 18-09-1989, advisor : G. Sabbagh.
- [12] *On rings admitting orderings and 2-primary chains of orderings of higher level*, written with E. Becker, **Manuscripta Math.** 65, 63-82, 1989.
- [11] *Foundations of chain algebra and a Nullstellensatz*, **Actes de l'Association Française d'Algèbre Ordonnée**, Le Mans, November 1987.
- [10] *Théorie du premier ordre des corps chaînables et des corps chaîne-clos*, **C. R. Acad. Sc. Paris t.** 304, # 16, 1987.
- [9] *Théorie des modèles et fonctions définies positives sur les variétés algébriques réelles*, **Contemporary Mathematics (AMS)**, vol 8, 119-139, 1982.
- [8] *Le 17ème problème de Hilbert pour les matrices hermitiennes*, **manuscript**, Département de Mathématiques, Université de Bretagne Occidentale, 1976.
- [7] *Quelques Notions Fondamentales d'Algèbre et d'Analyse*, conferences for high school teachers, **Publication de l'IREM de Brest**, 1976.
- [6] *Fonctions définies positives sur les variétés réelles*, written with P. Ribenboim, **Bull. Sc. Math.** Tome 98, 39-47, 1974.
- [5] *Le 17ème problème de Hilbert pour les matrices*, written with P. Ribenboim, **Bull. Sc. Math.**, Tome 98, 49-56, 1974.
- [4] *Sur le 17ème problème de Hilbert*, **Thèse de 3ème cycle**, Université de Paris-sud Orsay, 24-1-1973 ; advisor : P. Samuel ; Président : G Poitou.
- [3] *Sur le 17ème problème de Hilbert dans  $R(V)$* , **C. R. Acad. Sc. Paris**, Tome 276, 19-2-1973.
- [2] *Sur le 17ème problème de Hilbert*, **C. R. Acad. Sc. Paris**, tome 278, 20-8-1973.
- [1] *Etude et applications de la théorie des corps ordonnables*, mémoire D.E.A., Université Paris 6; (published in « **Arithmétique des corps** », Paulo Ribenboim, Hermann), 1971.

## International Conferences and Invitations in foreign Universities

August 3-9 2025, Conference DDG40: Ordered Algebraic Structures. Banyuls-sur-mer.  
<https://DDG40.sciencesconf.org>

October 25 – 28 2023, Colloquium dedicated to Eberhard Becker on the occasion of his 80th birthday, Dortmund (Germany).

May 28-June 3 2023, Model theory of valued fields, CIRM, Luminy.

March 12-18 2023, invited to « *Real Algebraic Geometry with a View toward Koopman Operator Methods* », Mathematisches Forschungsinstitut, Oberwolfach, (Germany).

October 23-28 and October 30 - November 4 2022, "*Real Algebraic Geometry*" and "*Real Aspects of Geometry*", CIRM - Luminy.

June 19-25 2022, invited "*Model Theory and Applications 2022*", Cetraro meeting (Italie).

June 14-25 2021, Summer school "*Symplectic, real, and tropical aspects of enumerative geometry*" and Conference "*Facets of real algebraic geometry*", Le Croisic et Nantes.

March 1-7 2020, invited to « *Real Algebraic Geometry with a View Toward Hyperbolic* », Mathematisches Forschungsinstitut, Oberwolfach, (Germany)

November 3-9 2019, participation to the final conference "*Conference on Global Approach to the Gender Gap in Mathematical, Computing and Natural Sciences: How to Measure It, How to Reduce It?*"; ICTP Trieste (Italy)

March 29th - April 7th 2019 : invited speaker, *On the number of connected components of smooth projective non empty real varieties.*, Arctic Applied Algebra, Arctic University, Tromsø, (Norway)

December 6-8 2018 : invited speaker, *A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences: How to Measure It, How to Reduce It?* ; KWIM-Festtag" Konstanz University (Germany)

November 23-29 2018 : invited speaker, *From Orderings to Valuation Fans and Related Topics*, Algebra : celebrating Paulo Ribenboim's ninetieth birthday.  
<https://www.ime.usp.br/~eventoribenboim/>, University Sao Paulo, Sao Paulo, Brazil

January 7-13 2018 : Research School, *Model Theory, Combinatorics and Valued Fields*, CIRM, Luminy.

December 1-3 2017 : Regional meeting of ICSU project « *A Global Approach to the Gender Gap in Mathematical and Natural Sciences: How to Measure It, How to Reduce It?* », Le cap (Afrique du Sud).

September 17-22 2017 : « *Perspectives in Real Geometry* », CIRM, Luminy.

August 20-26 2017 : « *Sums of squares* » University of Innsbruck (Autriche).

March 11-19 2017 : « *Topics in Real Geometry* », Graduate School of Mathematics, Nagoya University (Japon).

March 5-10 2017 : « *Real Algebraic Geometry with a view towards moment problems and optimization* », Mathematisches Forschungsinstitut, Oberwolfach, (Germany)

August 30-31 2016 : « *Marshall's problem and some further developments* », invited speaker nineteenth colloquiumfest held in honor of Murray Marshall, University of Saskatchewan, Saskatoon, (Canada).

October 11-17 2015 : « *Ordered Algebraic Structures and related Topics* », CIRM, Luminy.

June 17-20 2014 : "*Olga Taussky-Todd, sums of squares and Hilbert's 17th problem*", invited speaker, Konstanz University (Germany)

April 6-12 2014 : « *Real Algebraic Geometry With A View Toward Systems Control and Free Positivity* », Mathematisches Forschungsinstitut, Oberwolfach, (Germany)

January 5-18 2014 : Invited Professor : « *R-places and related topics* », Doctorate course in summer doctoral school. Universidad de Concepcion (Chile).

January 8-9 2014 : « *Hilbert's 17th problem : an old problem with new developments* », invited talk for the closure of mini-congreso, Universidad del Bio Bio, Concepcion (Chile)

July 17-20 2013 : *Model Theory and applications to Geometry*, CMAF Universidade de Lisboa , Lisbonne (Portugal).

July 15-20 2012 : "*On Valuation Fans and Related Topics*", Invited Speaker in the XXII Brazilian Algebra Meeting ; Salvador de Bahia (Brazil).

June 15- 19 2012 : invited to give seminar talks (Algebraic geometry and model theory seminars) in University Konstanz (Allemagne)

August 21-28 2011 : *Algebra, Combinatorics and Model Theory*, Koc University, Istanbul, Turquie.

July 23-29 2011 : « *On R-places and related topics* », Invited Speaker, Second international conference and workshop on Valuations (Universités de Valladolid et de Madrid), El Escorial, Espagne.

December 11-23 2010 : Conference “*On valuation fans and some elementary theories*” , special session Algebra and Model Theory, of the first joint meeting AMS/SoMaChi, Pucon (Chili)

August 15-27 2010 : participation ICWNM and ICM 2010, Hyderabad (Inde).

September 30 – October 6 2009 : *Positivity, Valuations and Quadratic Formes*, Conference in honor of Alexander Prestel, University of Konstanz, Germany.

August 9-14 2009 : ESF-EMS-ERCOM Conference on *Model Theory*, The Banach Center, Bedlewo, Poland.

February 15-21 2009 : Meeting on “Real Analytic and Nash Functions and Related Topics”, “*On the number of connected components of smooth real varieties*” in memoriam Alberto Tognoli, University of Pisa, Italy.

November 7-8 2008 : Conference in honor of Eberhard Becker, University of Dortmund, Germany.

September 13-15 2008, Conference on *The Model Theory of Fields*. University of Freiburg, Germany.

August 4-18 2008 “*On the number of connected components of smooth real varieties*”, Conference in honor of J.-J. Risler : “Around Hilbert’s 16<sup>th</sup> problem”, and Escola de Algebra, IMPA, Rio de Janeiro, Brazil.

May 26 - June 02 2008, “*Real Holomorphy Rings and the Complete Real Spectrum*”, 5<sup>th</sup> Linear Algebra Workshop, University of Ljubljana, Kranjska Gora, Slovenia.

January 14-21 2008, “*From Orderings to Valuation Fans*” , Colloquium talk and research stay at University of Hawaii at Manoa, USA.

January 8-14 2008, “*From Artin Schreier to Valuation Fans*”, Colloquium talk, and *Real Holomorphy Rings and the Complete Real Spectrum*”, Seminar talk, University of Saskatchewan, Canada.

April 24-30 2007, “*On Real Holomorphy Rings of Rings*”, invited speaker in Conference on Ordered Rings, Louisiana State University, Baton Rouge, USA (Honoring Melvin Henriksen on his 80<sup>th</sup> birthday).

November 25-27 2006, “*On Theories of Closures of fields equipped with valuation fans*”, invited conference for the Model Theory of Fields, University of Freiburg, Germany.

October 7-14 2006, invitation to attend workshop “*Positive Polynomials*”, Pacific Institute for Mathematical Sciences, Banff, Canada.

October 5-6 2006, Invitation mini-conference “*Topics in Real Algebraic Geometry*”, University of Saskatchewan, Saskatoon, Canada.

Avril 2-8 2006, "*Reading Stengle*", conference in workshop Sources for Real Geometry", held in Cortona, Scuola Normale Superiore di Pisa, Italy.

March 20-26 2006, "*On Valuation Fans*", invited speaker in Workshop on "Valuation Theory and its Application", in memoriam Otto Endler, University of Campinas, Brazil ;

March 17 2006, "*Number of connected components of real algebraic varieties*", Seminar of Algebra, Universidad de Buenos Aires, Argentina.

September 4 - 9 2005, participation to the Annual RAAG meeting, University of Passau, Germany.

March 28-April 7 2005, participation to Workshop, "*An Introduction to recent applications of Model Theory*", Isaac Newton Institute, Cambridge, Great Britain.

November 7-16 2004, "*Number of connected components and  $R$ -places*", Seminar conference, University of Saskatchewan, Saskatoon, Canada.

September 11-16 2004, "*Nombre de composantes connexes d'une variété réelle*", meeting on Real Algebraic and Analytic Geometry, Université de Kenitra, Mehdiya, Morocco.

July 14-27 2004, "*Algebraic closures of a field equipped with a valuation fan*", XVIII Escola de Algebra, Campinas, Brazil.

June 21-27 2004, participation to the annual meeting RAAG "Real Algebraic and Analytic Geometry", Universidades de Madrid et Santander, Salamanca, Spain.

April 12-16 2004 : "*Number of connected components and  $R$ -places*", Mathematical Sciences Research Institute", Berkeley USA.

March 22-26 2004 : participant to the RAAG european network meeting "*Singularity theory*", in honour of Stanisław Łojasiewicz, Cracovie, Poland.

March 11-12 2004 : participant to "*representation of semidefinite positive functions as sums of squares and related topics*". University of Pisa, Italy.

January 8-20 2004 : invited conference "*Towards a theory of  $R$ -places in spaces of orderings*", XII° Simposio Latinoamericano de Logica matematica, Universidad de Costa Rica, San Jose, Costa Rica.

November 11-18 2003 : invited conference "*Higher level orderings and  $R$ -places*" and work in collaboration with professor Murray Marshall, University of Saskatchewan, Saskatoon, Canada.

October 22- 26 2003 : invited conference "*From higher level orderings to  $R$ -places*", meeting on Real Algebra, European Network RAAG, Universität Dortmund, Germany.

April 2003 : participant to the annual RAAG meeting, and stay centro di Ricerca Matematica Ennio de Giorgi, Pisa, Italy.

Décember 2002 : participant to the "*Quadratic Forms*" meeting, Talca-Pucon, University of Talca, Chile.

September 2002 : participant to the Conférence « *Real Algebraic and Analytic geometry* », european network RAAG, Kazimierz, Poland.

August 2002 : participation *ICM 2002*, Beijing, China.

May 2002 : invitation Euro-Conférence in « *Model Theory and Applications* », University of Napoli, Ravello, Italy.

March 2002 : invited « *Colloquiumfest on Valuation Theory* », University of Saskatchewan, Saskatoon, Canada.

November 2000 : invited conference, "*From Hilbert's 17th problem to valuation fans*", University of Saskatchewan, Saskatoon, Canada.

July-August 1999 : invitation to the « *International Conference and Workshop on Valuation Theory* », University of Saskatchewan, Saskatoon, Canada.

September 1998 : invitation by CIRM of Trento, "*Real Algebraic and Analytic Geometry*", Levico, Italy.

June 1998 : invited to the Workshop on "*Model Theory, Algebra and Arithmetic*", Mathematical Sciences Research Institute, Université de Berkeley, U.S.A..

October 1997 : invited conference University of Trento, Italy.

September 1997 : invitation to HCM-Workshop "*Spectral Spaces in Real and  $p$ -adic Geometry*", University of Dortmund, Germany.

May 1997 : invited conference, *Generalizations of Real-closed fields theory*, University of Pise, Italy.

September 1996 : « *Real Algebraic and Analytic Geometry* », University of Genève, (Switzerland).

April 1996 : invited conference : special session of AMS meeting on "*Real Algebraic Geometry and Ordered Structures*" Baton Rouge, Louisiane, U.S.A., and research stay (part of the "special semester") .

June 1995 : invited conference in "*School on Model Theory and Real Algebraic Geometry*", and "*Real Algebraic and Analytic Geometry*", Universities of Madrid Santander, Segovia (Spain).

June 1994 : invited professor à l'Université de Dortmund, Germany, cooperation Program Procope.

May 1994 : participant to the meeting "*Real Algebraic and Analytic Geometry*" organized by University of Amsterdam in Soesterberg (Holland).

March 1993 : invited professor, University of Dortmund (Germany), cooperation Program Procope.

September 1992 : invited conference, "*Real Algebraic and Analytic Geometry*", C.I.R.M. Trento, Italy.

May 1992 : invitation to the meeting "*Quadratische Formen*" Mathematisches Forschungsinstitut Oberwolfach, Germany.

November 1991 : invited professor, Universität Dortmund, Germany, cooperation Program Procope.

June 1989 : invited professor Universität Dortmund (R.F.A.), cooperation program Procope.

October 1988 : invited conference, "*Real Algebraic and Analytic Geometry*", C.I.R.M. Trento (Italy).

August 1988 : participation to the "*Logic Colloquium 88*", Padova, Italy.

July 1987 : conference in "*Logic Colloquium 87*", Granada, Spain.

April 1987 : invited conference, meeting on "*Reelle Algebraische Geometrie*", Mathematisches Forschungsinstitut Oberwolfach, R.F.A..

August 1986 : participation ICM 1986, University of Berkeley, U.S.A..

July 1986 : invitation to "*Quadratic Forms and Real Algebraic Geometry*", Oregon State University, Corvallis, U.S.A..

July 1983 : invited and member of the organizing committee, A.M.S.- N.A.T.O. "*Ordered Fields and Real Algebraic Geometry*", Boulder, Colorado, U.S.A..

January 1981 : invited conference, 87<sup>th</sup> A.M.S. meeting., special session on "*Ordered Fields and Real Algebraic Geometry*", San Francisco, Californie, U.S.A..

August 1978 : participant ICM 1978, Helsinki, Finland.

Décember 1973 : invitation Bedford College de London, Great Britain.

June-July 1973 : invitation Open House, Queen's University, Kingston, Ontario, Canada