

## **Danielle GONDARD-COZETTE**

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### **Academic Career**

- Maître de Conférences honoraire University Paris 6 since 2009
- Maître de Conférences hors-classe University Paris 6 (1992-2009) ;
- Maître de Conférences University Paris 6 (1985-1992) ;
- Maître-Assistante University 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 of « collaboration bénévole » with University Pierre et Marie Curie since 2009.

### **Education and Diplomas**

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

### **Mathematical Researches**

#### **Research interests :**

- Real Algebra;
- Valuation Theory;
- Real Algebraic Geometry;
- Model Theory;
- Field Arithmetic.

### **International cooperations :**

- 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 ;

### **Séminars, edition :**

- Co-direction of seminar « *Structures Algébriques Ordonnées* » with F. Delon and M. Dickmann since 1984.
- Edition of proceedings of the seminar since 1984.
- Co-Editor for *The Rocky Mountain Journal of Mathematics*, fall 1984, volume 14, #4.
- Editor for volumes 32 et 33 in “*Publications Mathématiques de l’Université Paris 7*” (1990).
- 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.

### **Meetings organizer.**

- *Structures algébriques ordonnées et leurs interactions*, conference 1155, CIRM (Luminy), 12-16 Octobre 2015
- *Journées en l’honneur de Max Dickmann*, Institut de mathématique de Jussieu et Equipe de Logique, 24 et 25 juin 2007.
- 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 (juillet 1992), linked with 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**

- Delegate of UPMC in Comité de Direction of Institut Emile du Chatelet since 2010.
- Member of “*Conseil National des Universités*”, section 25th, 2003-2009.

- 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

### 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).

**On the Jury for entering "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".

**Scientific responsibility** for University Paris 6 in diploma for "*Conseiller, conseillère référent-e égalité femmes/hommes*" since janvier 2009 (DIU Universities Paris III and Paris 6).

## Others responsibilities, data, 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.

Membre de l'association *Femmes et Sciences* since its creation in 2000.

**Activities for « Association Française des Femmes Diplômées des Universités » (AFFDU) member of International Federation of University Women (IFUW)**

**Président of fellowships Commission from 1996 to 2002.**

**Publications and reports in *Diplômées* :**

- *Diplômées*, numéro 158, septembre 1991, 89-95.
- *Diplômées*, numéro 183, décembre 1997, 291-292.
- *Diplômées*, numéro 187, décembre 1998, 328-331.
- *Diplômées*, numéro 191, décembre 1999, 258-260.
- *Diplômées*, numéro 192, mars 2000, 4-11.
- *Diplômées*, numéro 194, décembre 2000, 260-262.
- *Diplômées*, numéro 199, décembre 2001, 316-324.

**Member of Commission Web et Nouvelles Technologies 1999-2002.**

**President of the admission and equivalence Commission since 2002.**

**Organizer for "*Hommage à Huguette Delavault*", 3 juin 2003 à Reid Hall.**

**Editor for *Diplômées* # 205.**

**Delegate from AFFDU for the creation of a diploma "*Equal opportunities for women and men*", created in 2004 (Universities Paris III and Paris 6) in collaboration with AFFDU and other associations, and supported by "Délégation Régionale aux droits des Femmes et à l'Égalité d'Ile de France" and "Fonds Social Européen".**

**Activities in association « *femmes et mathématiques* »**

**Participation to creation of the association on May 16th 1987**

**Member of council of « *Femmes et Mathématiques* » 1987-1994.**

**Conference on « *La formation du personnel de l'enseignement secondaire à l'égalité des chances entre filles et garçons* » Palais du Luxembourg, le 23 Mars 1991, (organized by AFFDU).**

**Contribution to « *Du côté des Mathématiciennes* », published by ALEAS (2002).**

**Participation to « *Women in Mathematics* », 24th august 2002, International Congress of Mathematicians (20-28/8/2002), Beijing (China).**

### **Publications :**

- *Huguette Delavault* , cosigned with Anne-Marie Charbonnel, Dictionnaire des créatrices Edition des femmes, à paraître.
- *Huguette Delavault 1924-2002*, in Gazette des mathématiciens, SMF, june 2003.
- *Huguette Delavault 1924-2002*, journal of association *Femmes et mathématiques*, july 2003.
- « *quelques actions de l'association Femmes et Mathématiques* », in Diplômées #158, september 1991, pp. 89-95 ;

### **Activities in association « Femmes et Sciences »**

**Participation to « Femmes dans les métiers scientifiques et technologiques »**, 17th november 2001, Ministère de la Recherche.

**Member of council of the French association « Femmes et Sciences » 2002-2005 and 2014-2017.**

### **Distinction :**

**"Chevalière" in "Ordre National du Mérite"** (attribution on 2nd of October 2003 by Claudine Hermann, professor in Ecole Polytechnique)

## **Mathematical research publications**

[30] *R-places and related topics*, 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.

[29] *Nombre de composantes connexes d'une variété réelle et R-places*, **preprint**.

[28] *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**.

[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] *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 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 2nth 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.

## Conferences and invitations in foreign universities

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.

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)

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

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

15- 19 June 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-ERC COM 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.

Mai 26-Juin 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 Stanislaw Lojasiewicz, 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