Curriculum Vitae

Alain VALETTE

17 september 2011

1 Personal data

<u>Name</u>: Alain Joseph Jean VALETTE
<u>Place and date of birth</u>: 24 Dec. 1958, Berchem-Sainte-Agathe (Belgium)
<u>Citizenship</u>: Belgian (Permis C in Switzerland)
<u>Marital status</u>: Married; 3 children (born 1988, 1990, 1992).
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2 Career

2.1 Present

Full Professor at the Université de Neuchâtel (since June 1988).
<u>Professional address</u>:

> Institut de Mathématiques - Unimail
> Rue Emile Argand 11
> CH-2000 Neuchâtel (Suisse)
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2.2 Education

1. "Licence en Sciences Mathématiques", Université Libre de Bruxelles, July 1980 (Grade: "la plus grande distinction").

2. "Agrégation de l'enseignement secondaire supérieur", Université Libre de Bruxelles, July 1980 (Grade: "distinction").

3. PhD in Sciences, Université Libre de Bruxelles, December 1983 (Grade: "la plus grande distinction et les félicitations du Jury"); title of dissertation: *K-théorie pour certaines C*-algèbres associées aux groupes de Lie* ; supervisors: Profs L. Waelbroeck (ULB) and A. Connes (Collège de France).

2.3 Employment history

Oct. 1980-Sept. 1984: Research assistant, Belgian National Fund for Scientific Research;
Oct. 1984-May 1986: Civil service as conscientious objector;
June 1986-May 1988: Senior Research assistant, Belgian National Fund for Scientific Research;
Oct. 1986-Sept. 1988: "Maître d'Enseignement", Université Libre de Bruxelles;

2.4 Visiting professorships

April-May 1988: Nice (France);
November 1993: Metz (France);
February 1996: Brussels (Belgium);
November 1996: Strasbourg (France);
February 1997: Visiting Scholar, Sydney University (Australia);
April-June 1999: ETH Zürich;
November-December 1999: Paris-Sud (Orsay, France);
February 2004: Metz (France);
September 2006: Lille (France);
October-December 2008: Orléans (France);
January and June 2011: Institut Henri Poincaré (Paris);
March 2011: Leuven (Belgium).

2.5 Visiting stays

Institut des Hautes Etudes Scientifiques (Bures-sur-Yvette, France), September 1981-June 1982;
University of Maryland (College Park, USA), April 1983;
Mathematical Sciences Research Institute (Berkeley, USA), august 1984;
University of Warwick (Great Britain), March-April 1987;
University of Geneva, May 1987;
Center for Mathematical Analysis (Canberra, Australia), August 1987;
Institut des Hautes Etudes Scientifiques (Bures-sur-Yvette, France), November-December 1999;
Newton Institute (Cambridge, UK), January 2000;

Institut des Hautes Etudes Scientifiques (Bures-sur-Yvette, France), 31 March-7 April 2002;
Institut des Hautes Etudes Scientifiques (Bures-sur-Yvette, France), September 2008;
Mittag-Leffler Institute (Stockholm), January 2012.

2.6 Scientific Prizes

Prix Sterpenich du Département de Mathématiques, Université Libre de Bruxelles, July 1978;
Prix F. Mercier de la Faculté des Sciences, Université Libre de Bruxelles, July 1978;
Lauréat du Concours des Bourses de Voyage de l'Etat belge, October 1981;
Lauréat du Concours annuel (groupe I) de la Classe des Sciences de l'Académie Royale de Belgique, December 1987;
Francqui Chair 2011 (opening lesson: Kortrijk, 16 February 2011).

3 Teaching and research

3.1 Courses previously taught

3.1.1 Bachelor level

General topology (Neuchâtel, from 1989-90 to 1993-94; 1996-97; 2009-10; 2010-11);
Probability theory (Neuchâtel, from 1994-95 to 1999-2000);
Fourier Analysis and Complex Analysis (Neuchâtel, since 2000-2001);
Algebra and geometry (Neuchâtel, since 2003-04);
Discrete mathematics (Neuchâtel, from 2004-05 to 2007-08);
Complements of analysis (Neuchâtel, 2004-05, 2006-07);
Algebra II (Neuchâtel, 2005-06, 2007-08, 2009-2010, 2012).

3.1.2 Master level

Representations of finite groups (Brussels, 1986-87 and 1987-88);
Algebra (Neuchâtel, 1989-1990, 1991-1992, 1993-1994);
Hyperbolic geometry (Neuchâtel, 1990-91);
Analytic number theory (Neuchâtel, 1992-93; 2011);
Plane algebraic curves (Neuchâtel, 1994-95);
Complex variables (Neuchâtel, 1995-96, 1997-98, 1999-2000, 2001-2002, 2003-04);
Expanding graphs (Neuchâtel, 1998-99);
Continued fractions (Neuchâtel, 2000-2001);

Lie groups (Neuchâtel, 2002-03; 2011);
Knot theory (Neuchâtel, 2002-03);
Introduction to the fundamental group (Neuchâtel, 2004);
Algebra and number theory (Neuchâtel, 2006-07, 2007-08);
Group representations (Neuchâtel, 2006-07);
Group actions on trees (Orléans, October 2008);
Geometric group theory (Neuchâtel, spring 2009).

3.1.3 Doctoral level

Representations of compact Lie groups (Brussels, 1986-87);
Kazhdan's property (T) for locally compact groups (with P. de la Harpe; Berne, May 1987);
Algebraic K-theory and cyclic cohomology (Nice, May 1988);
Ergodic theory (Lausanne, winter semester 1988-89);
Harmonic analysis on graphs (with P. de la Harpe; Lausanne, winter semester 1990-91);
Old and new about Kazhdan's property (T) (European school of group theory, Trento, August 1993);
L^2 cohomology and Kähler manifolds (with M. Burger, P. de la Harpe and M. Troyanov; Lausanne, winter semester 1994-95);
Introduction to L^2-cohomology (Brussels, "cours de DEA", February 1996);
Introduction to the Baum-Connes conjecture (Strasbourg, November 1996);
Introduction to the Baum-Connes conjecture (with P. Julg; Lausanne, January-February 1998);
Introduction to the Baum-Connes conjecture (Nachdiplom-vorlesungen, ETH Zürich, April-June 1999);
Ramanujan graphs (UBS, June 1999);
Ramanujan graphs (Orsay, November-December 1999);
Expanding graphs (Lausanne, winter semester 2000-2001);
The Baum-Connes assembly maps for discrete groups (Barcelona, September 2001);
C*-algebras and expanding graphs (Park City (Utah), July 2002).
Introduction to L^2-cohomology (Paris, July 2003).
Ergodic theory (Neuchâtel, winter semester 2003-04).
Amenability and semi-simple Lie groups (Venice, June 2004).
Property (T) (Ottawa, August 2004).
Introduction to the Baum-Connes conjecture (Neuchâtel, Doctoral school, September 2005).
Affine actions (Lille, September 2006).
Ramanujan graphs (EPFL, January-February 2007).
Amenability and affine actions (ESI Vienna, March 2007).

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Actions affines (Lausanne, October-December 2007).
Actions affines et géométrie des groupes (Toulouse, January 2008);
Actions affines isométriques sur des espaces de Banach (Orléans, Oct-Dec. 2008);
Novikov conjecture for uniformly embeddable groups (Orsay, Nov. 2010);
Yu's property (A) (Institut Henri Poincaré, Jan. 2011);
Metric embeddings in Hilbert and Banach spaces (Leuven, March 2011);
L^2-Betti numbers (Institut Henri Poincaré, June 2011);
Metric embeddings in Hilbert and Banach spaces (EPFL, Fall 2011).

3.2   Supervision of final year projects

I supervised one final year project at Brussels, and 25 at Neuchâtel.

3.3   Thesis Supervision

1. Pierre-Alain CHERIX, *Constantes de Kazhdan et rayons spectraux de marches aléatoires* (Neuchâtel, May 1996).

2. Hela BETTAIEB, *Conjecture de Baum-Connes et homologie en petit degré* (Neuchâtel, November 1998).

3. Cedric BEGUIN, *Autour de la conjecture des idempotents* (Neuchâtel, spring 1999).

4. Michel MATTHEY, *K-theories, C*-algebras and assembly maps* (In co-direction with U. Suter, Neuchâtel, May 2000).

5. Indira CHATTERJI, *On property (RD) for certain discrete groups* (In co-direction with M. Burger, ETH Zurich September 2001).

6. Florian MARTIN, *Analyse harmonique et 1-cohomologie réduite des groupes localement compacts* (Neuchâtel, January 2003).

7. Yves STALDER, *Espace des groupes marqués et groupes de Baumslag-Solitar* (Neuchâtel, December 2005).

8. Yves de CORNULIER, *On Kazhdan and Haagerup properties* (in co-direction with P. Buser), EPFL, December 2005.

9. Romain TESSERA, *Questions d'analyse et de géométrie sur les espaces métriques mesurés et les groupes* (in co-direction with T. Coulhon); Cergy-Pontoise, June 2006.

10. Soyoung MOON, *Amenable actions of discrete groups*, Neuchâtel, December 2009.

11. Dennis DREESEN *Equivariant and non-equivariant uniform embeddings into products and Hilbert spaces* (in co-direction with P. Igodt, Leuven, March 2011).

12. Olivier ISELY, *K-theory and K-homology for a semi-direct product of $\mathbb{Z}^2$ by $\mathbb{Z}$* (Neuchâtel, Oct. 2011).

Starting, Sept. 2011: Pierre-Nicolas JOLISSAINT (works on metric embeddings) and Thibault PILLON (works on affine isometric actions).

A Belgian speciality: the *"thèse annexe"* (a 2nd thesis on a subject outside of the main dissertation). I supervised those for Mohammed AMAT-TAT (Brussels 1988), Isabelle PAYS (Louvain-la-Neuve 1990), and Gerald TROESSAERT (Brussels 2000).

3.4 Administrative responsabilities

3.4.1 At the local level:

Swiss SNF grants: I benefited of those without interruption since 1989: I was responsible of the post-doctoral stays of Paul JOLISSAINT (1989-1991), Annabel DEUTSCH (1991-1993), Zhiqiang CHEN (1993-1995), Christophe PITTET (1995-1996), Dan KUCEROVSKY (1996-1997), Tullio CECCHERINI-SILBERSTEIN (1997-1998), Nicolas LOUVET (1998-2000), Hervé OYONO-OYONO (1999), François PIERROT (2000-2001), Markus NEUHAUSER (2001-2003); Nicolas PRUDHON (2003-2005), Swiatoslaw GAL (2005-2006), Emilie DAVID-GUILLOU (2007), Pierre-Emmanuel CAPRACE (2007), Daniel OTERA (2007-2008), Lionel NGUYEN VAN THE (2009), Florent BAUDIER (2010), Jeremie BRIEUSSEL (2011), Valerio CAPRARO (2011-2012), Sabine BURGDORF (2011-2012).

Member of the Research Committee of Université de Neuchâtel (until June 2000); chairman of the same Committee (September 2004-August 2008).

Head of the Mathematics Institute at Université de Neuchâtel (October 2000-October 2004).

Deputy Dean of the Faculty of Sciences, Univ. Neuchâtel, since September 2007.

3.4.2 At the Swiss level:

Member of the Subject Committee of CUSO for Mathematics (1994-1995);

Chairman of the 3ème Cycle Romand de Mathématiques (from May 1994 to December 2002); member of the Scientific Committee since 1990.

Member of the Scientific Committee, ICM 94 (Zürich);

Member of the scientific board of Centre Interfacultaire Bernoulli, EPFL (since 2002);

(with G. Arzhantseva, Geneva) Project leader for "Limits of graphs in group theory and computer science", thematic semester at Centre Interfacultaire Bernoulli (EPFL), January-June 2007; available budget: 180.000 CHF.

Deputy representative of Univ. Neuchâtel at the "Conseil de Fondation" of the Swiss NSF, since 2009.

3.4.3   At the international level:

Elected by SCNAT (Swiss Academy of natural sciences) as representative in the board of IHES (January 2000);

Member of the European network TMR *Geometric Analysis* (from april 2000 to march 2004): I was in charge of an amount of 114.000 euros financing 24 months of post-doctoral stays.

Member of the scientific Committee of the CLUSE Doctoral school in Mathematics (between Universities of Dijon, Besançon, Neuchâtel, Geneva and EPFL).

Project member of a Marie Curie Action: In the framework of the thematic semester "Limits of graphs in group theory and computer science" at Centre Interfacultaire Bernoulli (EPFL), January-June 2007, G. Arzhantseva (Geneva) and I took part in a *Marie Curie Action*, in collaboration with other teams active in group theory (CNRS Marseille, Edmund Landau Center (Israel), Technische Universität Graz (Austria), Anogia Academic Village (Crete), Erwin Schroedinger Institute (Vienna)); budget allocated by European Commission: 522.000 euros.

Member of the Scientific Committee for Mathematics, FWO-Flanders (since January 2010).

Project leader of a Sinergia project of Swiss SNF: joint research project with Profs G. Arzhantseva (Vienna) and N. Monod (EPFL), from April 1st, 2010, to March 31, 2013. Budget: 800.000 CHF

3.5   Editorial tasks

Scientific editor of *Journal of Lie Theory* (since June 1994), of *Bulletin of the Belgian Math. Society - Simon Stevin* (since January 1998), of *Expositiones Mathematicae* (since January 2006), of *Annales de l'Institut Fourier (Grenoble)* (since June 2006), of *Composition Math.* (since Jan. 2011).

3.6 Organisation of international conferences and seminars

Winter school *Boundaries of groups*, Champoussin, March 1992 (organized with P. de la Harpe);

Borel seminar *Non-commutative differential geometry*, Bern, May 1992;

Journées de la Société Mathématique Suisse, *Lattices in semi-simple Lie groups*, Neuchâtel, May 1993;

Winter school *Growth and isoperimetric inequalities*, Champoussin, March 1994;

Winter school *Group cohomology*, Château-d'Oex, March 1995 (organized with P. de la Harpe, J-C. Hausmann and M. Kervaire);

Winter school *The zero in the spectrum conjecture*, Les Diablerets, March 1996;

Winter school *Baum-Connes conjecture*, Les Diablerets, March 1998;

Borel seminar *Wavelets* , Bern, April-June 1998 (organized with H-M. Reimann);

Workshop on the Baum-Connes conjecture, ETH Zurich, 4-7 May 1999;

Borel seminar *Groups and languages*, Neuchâtel, 25-27 June 2000 (organized with P. de la Harpe);

Borel seminar *2001: an MM-space odyssey*, Bern, April-June 2001 (organized with P. de la Harpe and M. Troyanov);

Journées de la Société Mathématique Suisse, *Riemann's ζ-function*, Neuchâtel, 7-9 June 2001;

Mini-workshop *Geometrization of Kazhdan's property (T)*, Oberwolfach (Germany), 7-13 July 2001 (organized with B. Bekka and P. de la Harpe);

Borel seminar *Cost and L^2-cohomology*, Bern, April-June 2002.

Journées "Maths + stats" du 3ème cycle Romand, *Random groups and percolation*, Neuchâtel, 11-13 December 2002.

Winter school *Quasi-isometry invariants*, Les Diablerets, March 2004 (organized with G. Arzhantseva and D. Gaboriau)

Conference on the occasion of Pierre de la Harpe's 60th birthday, Geneva, October 2004 (organized with T. Smirnova-Nagnibeda and C. Pache).

Session "Harmonic analysis" of the Joint Meeting of the BENELUX and French Mathematical Societies, Ghent (Belgium), 20-22 May 2005 (organised with B. Bekka and C. Molitor-Braun).

Journées "Les Maths de Michel" (to the memory of Michel Matthey), Neuchâtel, 25-26 September 2006 (organised with P. Balmer et J. Thévenaz).

International congress "Geometric linearization of graphs and groups", EPFL, 22-26 January 2007 (organized with G. Arzhantseva).

Discrete groups and geometric structures with applications III, Kortrijk (Belgium), 26-30 May 2008 (member of scientific committee and editor of Proceedings).

Analysis and geometry on groups, Neuchâtel, June 11-13, 2008.

Affine Isometric Actions of Discrete Groups, Ascona (Switzerland), June 28 - July 3, 2009 (organized with G. Arzhantseva).

Journées Neuchâtel-Besançon d'Analyse Fonctionnelle, Neuchâtel, 3-4 June (organized with F. Baudier).

Finite-dimensional approximations of groups and algebras, Oberwolfach (Germany), 16-20 May, 2011 (organized with G. Arzhantseva and A. Thom).

Metric embeddings and group theory, MSRI (Berkeley, USA), Oct. 17-21, 2011 (co-organized with B. Johnson, A. Naor, G. Schechtman).

$CAT(0)$ Spaces and Groups, Les Diablerets (Switzerland), March 25-30, 2012 (organized with N. Monod).

3.7 Invitations to conferences, as invited speaker (limited to the last 5 years):

2006: *The rapid decay property*, AIM, Palo Alto, 21-28 January; *British Math. Colloquium*, Newcastle, 11-14 April; *Operator algebras and applications*, Odense, 20-23 April; *Geometric and asymptotic group theory with applications*, Manresa (Catalogne), 30 August- 2 September;

2007: *Analysis on Graphs and its Applications*, Gregynog, Newtown (Wales), 10-15 January; *: Workshop on amenability beyond groups*, Erwin Schrödinger Institute, Vienna, 5-9 March; *Non Commutative Geometry Conference in honor of Alain Connes*, Paris, 2-6 April; *Operator spaces and group algebras*, Banff (Canada), 19-24 August; *Introduction to Geometric group theory*, Berkeley, 27-31 August. *Propriétés analytiques des groupes discrets*, Orléans, 12-13 October; *Théorie géométrique des groupes*, Orsay, 19-21 December.

2008: *Journées "Algèbres d'Opérateurs" en l'honneur de Claire Anantharaman-Delaroche*, Bourges, 27 - 28 June; *Rigidity School*, Kyoto, 29 June-5 July; *Workshop "Analytic Properties of Infinite Groups"*, Geneva, August 2529; *von Neumann algebras*, Oberwolfach (Allemagne), 27-31 october; *Analyse harmonique, algèbres d'opérateurs et représentations*, CIRM (Luminy, Marseille), 3-7 novembre 2008; *EMS-LMS meeting on group theory*, Edinburgh (UK), 10-13 December 2008.

2009: *Quantitative and computational metric geometry*, IPAM (Los Angeles), 12-16 January; Workshop *von Neumann Algebras and Ergodic Theory*, UCLA, 14-19 March; Meeting *Cohomologie L^p et actions affines sur les espaces L^p*, Orléans, 3-5 June; *Geometric Group Theory - Davis 60*, Bedlewo (Poland), 14-18 June; *Analysis and geometry in group theory*, IHES (France), 7-11 September; *Joint meeting of the Korean and American Math Societies*, Seoul, 15-23 december.

2010: *von Neumann algebras and group actions*, Copenhagen, 1-5 Feb.; *Groups and large scale Geometry*, Clermont-Ferrand, 8-11 June;

2011: *Embeddings*, Newton Institute (Cambridge, UK), 10-14 January; *Metric embeddings, algorithms and hardness of approximation*, IHP (Paris), 17-18 January; *Discrete groups and geometric structures with applications IV*, Ostende (Belgium), 30 May-2 June; *Amenability*, Heilbronn Institute (Bristol, UK), 21-23 June; *Measurable and geometric group theory*, IHP (Paris), 4-7 July; *Non-Linear Geometry of Banach Spaces, Differentiability and Geometric Group Theory*, Texas A& M, 1-5 August;

3.8   Invitations in Universities (limited to the 5 last years):

2006: Odense (Danemark), 15-18 February; Rutgers (New Jersey), 10-13 May; Grenoble, 22-23 May; Strasbourg, 1er-3 June; Brussels, 29 September; Kortrijk (Belgium), 6 October.

2007: Uni. Zurich, May 23; Ohio State Univ. (Columbus), May 29- June 2nd; Palermo (Sicily), 13-16 September; Clermont-Ferrand, 24-26 September; Bordeaux, 10-11 October.

2008: Toulouse, 15-18 January; Southampton, 13-16 February; Muenster, 17-19 April; Lyon I, 24-25 April; Paris 6-Chevaleret, 11 September; Paris-Sud (Orsay), 18 September; Paris 6-Chevaleret, 25 September; Paris 6-Chevaleret, 18 November; Caen (France), 4-6 December; Rennes (France), 7-8 December.

2009: Oxford, 15-17 February; Maynooth (National Ireland Univ.), 21-23 April; Grenoble, 30 April; Louvain-la-Neuve, May 20; Tuebingen, 22-23 June; Leuven, 27 August; EPFL, 17 September.

2010: Copenhagen, 10-11 April; EPFL, 14 April; Imperial College (London), 26 May; Paderborn, 28 June; Muenster, 29 June;

2011: Montpellier, 17-18 February; Besançon, 9-10 June; Davis (California, USA), Oct. 14-15.

3.9   Popularization

From 1993 to 2003: coaching (vice-coach) of the Swiss team at International Mathematical Olympiads;

Participation to the Week *Science et Cité*, Neuchâtel, 6-13 May 2001;

Two presentations in the *Nuit de la Science*, Geneva, July 2001 and July 2002.

Organization of Mathematics Exhibitions (Uni. Neuchâtel, May 2001, March 2005, May 2010; Lycée Denis-de-Rougemont, Neuchâtel, 8 March 2008).

Wide audience lecture "The Da Vinci Code viewed by a mathematician", Neuchâtel, 17 March 2005; Université Populaire Jurassienne, Moutier, November 10, 2005; Delémont, November 25, 2006.

"Soft skills" lecture: "How I will referee your first paper", Swiss doctoral Program, Geneva, 11 February 2010.

"L'imagination en Mathématiques", Cité des Sciences (La Villette, Paris), 10 and 16 Dec.

Various presentations on mathematical subjects in Belgian, French and Swiss high schools.