

Curriculum vitæ

September 1, 2016

Antoine Ducros.

Date of birth : 03/11/1972 in Avignon (France); single; no child.

French citizenship.

Full professor at Université Paris 6. The french precise title is *Professeur des Universités de classe exceptionnelle*.

Junior member of the *Institut universitaire de France*.

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1 Education and employment

- September 2016: I became *Professeur de classe exceptionnelle*.
- April 19 -July 18, 2015: stay at Weizmann Institute in Rehovot (Israel) as an invited professor (I have been invited by Vladimir Berkovich).
- January, 20th - May, 23rd, 2014: research member at MSRI (Berkeley, California) for te semester *Model Theory, Arithmetic Geometry and Number Theory*.
- October 1st, 2012: I became a junior member of the *Institut universitaire de France* (it means that I have a reduced teaching duty for 5 years).
- September 1st, 2012: I became first-class full professor (*Professeur de première classe* in french).
- First semester 2010-2011: teaching-free semester.
- September 2009: full professor position at the university Paris 6, where I joined the scientific team *Topologie et géométrie algébriques* at the *Institut de mathématiques de Jussieu*.
- January 15, 2009 - march 14, 2009: invited professor at the Weizmann Institute, in Rehovot.
- Second semester 2007-2008: teaching-free semester; I was invited in the Academia Sinica (Taipei, Tawan) between April, 20 and May, 3.

- September 2006: full professor position at the Laboratoire Dieudonné (university of Nice) ; I joined the scientific team *Géométrie algébrique*.
- December 2005 : defense of my habilitation's thesis in Rennes ; the title was *Conséquences algébriques de certaines propriétés transcendantes des variétés réelles et p -adiques*. Composition of the commission: Yves André, Antoine Chambert-Loir, Jean-Louis Colliot-Thélène, Michel Coste, Michel Raynaud and Alexe Skorobogatov ; the scientific reports were written by Yves André, Vladimir Berkovich and Claus Scheiderer.
- Second semester 2003-2004: teaching-free semester ; I was invited for one month (in may) at Weizmann institute in Rehovot.
- September 1998: assistant professor position at the IRMAR (University of Rennes 1); I joined the scientific team *Géométrie algébrique réelle, calcul formel et complexité*.
- September 1997-june 1998: military service as a mathematics teacher at the *Prytanée Nationale Militaire* (a military high school) in La Flèche; I gave lectures to high school students and to officers.
- June 1997: defense of my Ph. D's thesis at the Université Paris-Sud (Orsay); the adviser was Jean-Louis Colliot-Thélène ; its title was *Principe local-global sur le corps des fonctions d'une courbe réelle : espaces principaux homogènes et surfaces rationnelles*; composition of the commission : Jean-Louis Colliot-Thélène, Jean-Jacques Sansuc, Laurent Clozel, Michel Coste, Louis Mahé and Michel Raynaud; the scientific reports were written by Michel Coste and Claus Scheiderer.
- November 1993-june 1997: Ph. D's thesis at the Université Paris-Sud, first of all as a student at the *École normale supérieure* (till september 1995), then with a grant of the french government (with 4 hours teaching a week during one semester every year).
- July 1993: *agrégation de mathématiques* (special exam to be high school teacher) ; rank : 2.
- July 1991: I passed the exam to enter the *École normale supérieure* in Paris; rank : 15.

2 Articles

Survey papers

1. *About Hrushovski and Loeser's work on the homotopy type of Berkovich spaces*, notes of the two talks I gave at the *Simons Symposium* of april 2013 in St-John (US Virgin Islands), in *Non-Archimedean and Tropical geometry*, Simons Symposia, Springer (2016).
2. *Les espaces de Berkovich sont modérés, d'après E. Hrushovski et F. Loeser*, talk number **1056** of the Bourbaki seminar (june 2012), in *Astérisque* **352** (2013), 459-507.
3. *Étale cohomology of schemes and analytic spaces*, lecture notes of the mini-course I gave in the 2010 summer school of the IMJ; it will be published in the proceedings, in the collection *Lecture Notes in Mathematics*.
4. *Géométrie analytique p -adique : la théorie de Berkovich*, *Gaz. Math.* **111** (2007), 1227.
5. *Espaces analytiques p -adiques au sens de Berkovich*, talk number **958** of the Bourbaki seminar (march 2006), in *Astrisque* **311** (2007) 137-176.

Research papers

6. *Cohomological finiteness of proper morphisms in algebraic geometry: a purely transcendental proof, without projective tools*, to appear in the proceedings of the 2010 summer school of the IMJ, in the collection *Lecture Notes in Mathematics*.
7. *Espaces de Berkovich, polytopes, squelettes et théorie des modèles*, *Confluentes Math.* **4** (2012), no. 4, 1250007, 57 pp.
- 6 *bis*. *Erratum* of the article [6], *Confluentes Math.*, 5 no. 2 (2013), p. 43-44.
8. *Toute forme modérément ramifiée d'un polydisque ouvert est triviale*, *Math. Z.* **273** (2013), no. 1-2, 331353.
9. *Les espaces de Berkovich sont excellents*, *Ann. Inst. Fourier.* **59** (2009), no. 4, 1407-1516.
10. *Triangulations et cohomologie étale sur une courbe analytique p -adique*, *J. Algebraic Geom.* **17** (2008), no. 3, 503-575.
11. *Variation de la dimension relative en géométrie analytique p -adique*, *Compositio Math.* **143**, (2007), no. 6, 1511–1532.
12. *Image réciproque du squelette par un morphisme entre espaces de Berkovich de même dimension*, *Bull. Soc. Math. France* **131** (2003), no. 4, 483–506.
13. *Parties semi-algébriques d'une variété algébrique p -adique*, *Manuscripta Math.* **111** (2003), no. 4, 513–528.
14. *Cohomologie non ramifiée sur une courbe p -adique lisse*, *Compositio Math.* **130** (2002), no. 1, 89–117.
15. *Points rationnels sur la fibre spéciale d'un schéma au-dessus d'un anneau de valuation*, *Math. Z.* **238** (2001), no. 1, 177–185.
16. *Torseurs sous une variété abélienne sur $R((t))$* , *Manuscripta Math.* **105** (2001), no. 3, 311–321.

17. *L'obstruction de réciprocity l'existence de points rationnels pour certaines variétés sur le corps des fonctions d'une courbe réelle*, J. Reine Angew. Math. **504** (1998), 73–114.
18. *Fibrations en variétés de Severi-Brauer au-dessus de la droite projective sur le corps des fonctions d'une courbe réelle*, C. R. Acad. Sci. Paris Sr. I Math. **327** (1998), no. 1, 71–75.
19. *Dimension cohomologique et points rationnels sur les courbes*, J. Algebra **203** (1998), no. 2, 349–354.
20. *Principe de Hasse pour les espaces principaux homogènes sous les groupes classiques sur un corps de dimension cohomologique virtuelle au plus 1*, Manuscripta Math. **89** (1996), no. 3, 335–354.

Preprints

21. *Introduction la thorie des schmas*, lecture notes of two master courses I taught at the university Paris 6. I plan to make it a book.
22. *Formes différentielles et courants sur les espaces de Berkovich*, **joint work with Antoine Chambert-Loir**, arXiv 1204.6277.
23. *Families of Berkovich spaces* (168 pages), arXiv 1107.4259.

Work in progress

24. *La structure des courbes analytiques*, 356 pages now- a preliminary version is available on my webpage.

3 PhD students, master students, PhD courses

PhD students

- I supervise the PhD of Marc Chapuis since septembre 2013.
- I supervise the PhD of Thibaud Lemanissier since september 2013 (joint supervision with Frédéric Paugam, the PhD began in september 2011).
- Jean-Francois Dat and myself have supervised together Florent Martin's Ph. D thesis on constructibility in Berkovich's theory; he has defended it the 7th of october 2007. He is currently a post-doc at the University of Regensburg (Germany).
- Antoine Chambert-Loir and myself supervised together Jérôme Poineau's thesis on Berkovich spaces over \mathbb{Z} ; it was defended the 30th of November 2007 in Rennes ; the first part of it gave rise to an article in *Compositio Mathematica*, the second one to an *Astérisque* volume. Jérôme Poineau is now full professor in Caen, since the first of september 2014.

Master students

- 2012-2013: supervision of Marc Chapuis's master's thesis; he is my PhD student since september 2014.
- 2011-2012: supervision of one master's thesis in Paris 6 (Rita Rodriguez; she began a PhD under Charles Favre's supervision in september 2013).
- 2010-2011: supervision of 2 master's thesis in Paris 6 (Giulia Battiston, who has defended her PhD under the supervision of H el ene Esnaut, and Daniele Turchetti, who has defended his PhD thesis under the supervision of Ariane Mzard).
- 2009-2010: supervision of 1 master's thesis in Paris 6 (Lorenzo Fantini, who has defended his PhD under the supervision of J. Nicaise).
- 2004-2005: supervision of 1 master's thesis in Rennes (Sylvie Lemerdy, who is now professor in 'classes pr eparatoires').

Participation to PhD's and habilitation's thesis defense committees

- PhD's thesis: Amaury Thuillier (student of A. Chambert-Loir, Rennes, october 2005), Fares Maalouf (student of F. Delon, Paris 7, december 2008), Olivier Haution (student of N. Karpenko, Paris 6, december 2009), Benjamin Colas (student of L. Schneps, Paris 6, september 2001), Charles de Clercq (student of N. Karpenko, Paris 6, november 2011), Bertrand Duma (a student of D. R ossler, Paris 7, september 2012), Le Quy Thong (a student of F. Loeser, Paris 6, december 2012), Lorenzo Fantini (student of J. Nicaise, Leuven, october 2014), and Daniele Turchetti (student of Ariane M ezard, Versailles, October 2014).
- Habilitation's thesis (Johannes Nicaise Lille, december 2008 ; I was one of the referees), Samuel Boissiere (Nice, october 2010), Matthieu Romagny (Paris 6, november 2011), Jrme Poineau (Strasbourg, october 2013).

Master courses

- 2014-2015: 2 Master courses in Paris 6, *Tools for algebraic geometry* (categories, commutative algebra, sheaves), and *Introduction to scheme theory*.
- 2013-2014: 2 Master courses in Paris 6, *Tools for algebraic geometry* (categories, commutative algebra, sheaves), and *Introduction to scheme theory*.
- 2012-2013: 2 Master courses in Paris 6, *Tools for algebraic geometry* (categories, commutative algebra, sheaves), and *Introduction to scheme theory*.

- 2011-2012: one Master course in Paris 6, *Introduction to scheme theory*.
- 2007-2008 and 2008-2009: one Master course in Nice, *Introduction to algebraic geometry*.
- 2003-2004, 2004-2005, and 2005-2006: one Master course in Rennes, *Introduction to algebraic geometry*.

4 Participation to scientific projects

- **ANR project:** I am a member of the project *Valuations, combinatoire et thorie des modles*.
- **ANR project:** I was leader of the granted project *Espaces de Berkovich* of the french *Agence nationale de la recherche*, which was accepted in July 2007 and ended in september 2012. The other members were Pascal Autissier, Jean-Yves Briend, Romain Dujardin, Charles Favre, Peter Haissinsky, Johannes Nicaise, Jéôme Poineau and Amaury Thuillier. We have spent around 100 000 euros.
- **ACI:** I was a member of the *Action concertée initiative* (a granted project) *Systèmes dynamiques polynomiaux* (2002-2005), a granted project whose leader was Serge Cantat.

5 Organisation of conferences

- June 2012: I organized with Antoine Chambert-Loir the conference *Pinceaux, formules et champs* for Laurent Moret-Bailly's 60th birthday.
- June 2012: I organized with Charles Favre a workshop on non-Archimedean analysis in Paris 6.
- June 2011: I organized with Charles Favre a workshop on non-Archimedean dynamics in Bordeaux.
- July 2010: I organized with Charles Favre the summer school of our ANR project.
- April 2007: I organized in Nice a workshop on the applications of Berkovich's geometry.

6 Invitation to conferences (since 2007)

- December 2015: I will attend the workshop *Non-Archimedean geometry and applications*, in Oberwolfach.
- End of august 2015: I will attend the conference *Non archimedean analytic geometry: theory and practice*, in Papeete (Tahiti, french Polynesia).
- End of june– beginning of July, 2015: I have been invited to give a course during a summer school at BICMR (Beijing).
- February 2015: I have attended the Simons Symposium *Non-Archimedean and tropical geometry* in Porto-Rico.
- November 2014: I have attended the conference *Valuation theory of its applications* in Oberwolfach.
- September 2014: I have given a talk at the opening conference of the research program *Higher invariants* in Regensburg,
- October 2013: I have given a talk during the workshop *Regensburg days on non-archimedean geometry*.
- May 2013: I have given talks and lectures in Moscow, where I'm invited for two weeks by the Laboratoire Poncelet.
- April 2013: I have given a talk during the Simons Symposium *Non-Archimedean and tropical geometry* in St John (US Virgin Islands).
- January 2013: I have given a talk in Leiden in the workshop *Trends in arithmetic geometry*.
- November 2012: I have given a talk in the Oberwolfach's workshop *Non-Archimedean analytic geometry*.
- June 2012: I gave a talk in the workshop *Interactions of Model Theory with Number Theory and Algebraic Geometry* in Bonn (MPI).
- June 2012: I gave a talk in the workshop *Non-Archimedean analysis* in Paris 6.
- June 2012: I gave a talk on Hrushovski and Loeser's work on stably dominated types at the Bourbaki seminar.
- July 2011: I gave a course on Berkovich spaces at the *Second international conference on valuation theory* in Segovia.

- July 2010: I gave a course on the étale cohomology of schemes and analytic spaces in the summer school of my ANR project in Paris 6.
- September 2009: I gave a talk in the workshop *p-adic analysis and application* in Trieste.
- January 2009: I gave a course on Berkovich spaces in the annual meeting of the research group GAC at the CIRM (Marseille).
- May 2008: I gave a talk at the workshop *Motivic Integration and its Interactions with Model Theory and Non-Archimedean Geometry* in Edinburgh.
- February 2008: I gave a talk at the conference *Arithmetic applications of p-adic analysis and rigid spaces* in Regensburg.
- February 2008: I gave a course on Berkovich spaces at the workshop *Ultrametric dynamical days* in Santiago, Chile.

7 Invitations abroad

- April-July 2015: I will visit Weizmann Institute in Rehovot (Israel) as an invited professor (I have been invited by Vladimir Berkovich).
- I have attended the semester *Model Theory, Arithmetic Geometry and Number Theory* at the MSRI, from January, 19th till May, 24rd 2014 (support: *Research membership* of the MSRI, and IUF).
- February- March 2013: I've spent three weeks at the Hebrew university in Jerusalem (I was invited by Ehud Hrushovski).
- January-March 2009: I spent two months as an invited professor at the Weizmann Institute, where I was invited by Vladimir Berkovich.
- May 2004: I spent one month at the Weizmann Institute, where I was invited by Berkovich.

8 Scientific responsibilities (since 2007)

- I'm a member of the editorial board of *Mathematische Zeitschrift* since the first of July 2013.
- Since the first of september 2012, I'm a member of the so-called *Comité national de la recherche scientifique*, for the next four years. This committee is in charge of hiring and promoting people for the french CNRS (which offers teaching-free permanent research positions).

- I've been deputy-director (september 2010 - january 2012) and director (january 2012- november 2013) of the scientific team *Topologie et géométrie algébriques* of the *Institut de mathématiques de Jussieu*.
- I've been in charge of the colloquium of the *Institut de mathématiques de Jussieu* from september 2010 till september 2012.
- I'm a member since september 2010 of the committee of the french mathematical society which supervises the organization of the so-called *tats de la recherche*.
- I've been three times (2010, 2011, 2012) member of the committee of the mathematics department of Bordeaux which was in charge of hiring a 'maître de conférences'.
- Between 2007 and 2009 in Nice, I was responsible for the master's degrees, responsible (together with Samuel Boissière) of the algebraic geometry seminar, and a member of the library committee.