Ahmed ABBES

Curriculum Vitae

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Date of birth : 24 Mai 1970 (Sfax, Tunisia)
Nationality : French and Tunisian
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Positions Held

2013– Directeur de Recherche 1ère classe au CNRS, IHÉS.
2011–2013 Directeur de Recherche 2ème classe au CNRS, IHÉS.
2007–2011 Directeur de Recherche 2ème classe au CNRS, Université de Rennes I.
1996–2007 Chargé de Recherche au CNRS, Université Paris 13.
1996 Post-doc. Max-Planck Institut für Mathematik, Bonn.
1995–1996 Post-doc. at IHÉS, Bures sur Yvette.

Higher Education

2003 Habilitation à diriger des Recherches, Université Paris 13.
1995 Ph.D. in Mathematics, Université Paris 11.
1990–94 Student at the École Normale Supérieure de Paris.
1992–93 Master of Mathematics, École Normale Supérieure de Paris.
1991–92 Diplôme d'Études Approfondies in Mathematics, Université Paris 11.
1990–91 Licence and Maîtrise (B.Sc.) in Mathematics, Université Paris 6.

Awards

— Corresponding Member of the Tunisian Academy of Sciences, Letters and Arts, Beit al-Hikma.
— Bronze medal of the CNRS (2005).
— Ordway distinguished Professor, School of Mathematics, University of Minnesota, USA (2016).

Visiting Positions

10/2019–11/2019 Visiting Professor, University of Tokyo (Japan).
9/2018–12/2018 Visiting Professor, University of Tsinghua (China).
10/2010–03/2011 Visiting Professor, University of Tokyo (Japan).
04/2008–09/2008 Visiting Professor, University of Tokyo (Japan).
08/1999–07/2000 Visiting Assitant Professor, University of Californie, Berkeley (USA).

Also held short-term visiting positions in Tokyo University (Japan), University of California at Berkeley (USA), University of Minnesota (USA), Purdue University (USA), University of Padova (Italy), University of Bielefeld (Germany), University of Tsinghua (China), KIAS (Korea), Isaac Newton

Institute (UK), Mathematical Research Institute (India) and Morningside Center of Mathematics (China).

Ph.D. Theses supervised

— A. Marmora, *p-adic local constants* (2006) ; Assistant Professor (Maître de Conférences) at Strasbourg University (France).
— Y. Tian, *Canonical subgroups and monodromy of Barsotti-Tate groups* (2007) ; Professor at Strasbourg University (France).
— H. Hu, *Ramification and nearby cycles of ℓ-adic sheaves on a scheme over a DVR* (2014) (codirection with Lei Fu, Chern Institute of Mathematics, University of Nankai, China) ; Associate Professor at Nanjing University (China).
— D. Xu, *p-adic and modulo p^n Simpson Correspondences* (2017) ; Associate Professor at Morningside Center of Mathematics (China).
— Q. Guignard, *ℓ-adic local constants* (2019) ; postdoc at the Max-Planck Institute in Bonn (Germany).
— A. Bah, *Variation of the Swan conductor of an étale ℓ-adic sheaf on a rigid disc of changing radius* (since October 2018).
— T. He, *p-adic Hodge theory and de Jong alterations* (since October 2020).

Master students : A. Marmora (2002), Y. Tian (2005), F. Binda (2012), D. Xu (2013), A. Bah (2017), T. He (2019).

Postdocs supervised

— D. Patel, currently Assistant Professor at Purdue University (USA), from September 2013 to August 2014, supported by my ANR grant ThéHopaD.
— P. Achinger, currently Assistant Professor at IMPAN (Poland), from October 2016 to September 2017, supported by the EPDI program at IHÉS.

Invited Talks at conferences

— *Around p-adic cohomologies*, on the occasion of Bruno Chiarellotto's 60th anniversary, Italy (2021).
— *Conference on Arithmetic Geometry in honor of Luc Illusie*, Chinese Academy of Sciences, China (2021).
— *p-adic Hodge Theory*, second Simons Symposium, Elmau, Germany (2019).
— *Riemann-Hilbert correspondences*, Padova, Italy (2018).
— *p-adic Hodge Theory*, first Simons Symposium, Elmau, Germany (2017).
— *Recent developments in integral p-adic cohomology theories*, Bonn, Germany (2016).
— *Arithmetic Algebraic Geometry*, in honor of Nicholas Katz's 71st birthday, Beijing, China (2015).
— *Algebraic Number Theory and Related Topics 2013*, Kyoto, Japon (2013).
— *Conference on Arithmetic Algebraic Geometry*, Paderborn, Germany (2013).
— *Higgs bundles on p-adic curves and representation theory*, Mainz, Germany (2012).
— *Arithmetic Geometry*, Oberwolfach, Germany (2012).
— *Arithmetic Geometry week in Tokyo*, Japan (2012).
— *Géométrie arithmétique et motivique*, Luminy, France (2011).
— *Algebraic Number Theory and Related Topics 2010*, Kyoto, Japan (2010).

- *Workshop on algebraic, formal, and rigid geometry. Dedicated to Siegfried Bosch on the occasion of his 65th Birthday*, Padova, Italia (2010).
- *Conference on Arithmetic Algebraic Geometry, on the occasion of Thomas Zink's* 60*th birthday*, Bielefeld, Germany (2009).
- *Arithmétique et Géométrie*, conférence organisée à l'occasion du 60ème anniversaire de Jean-François Boutot, Strasbourg, France (2009).
- *Arithmetic Geometry*, Kyoto, Japan (2006).
- *Entre Bures et Orsay : une conférence de géométrie algébrique en l'honneur de Luc Illusie*, Orsay, France (2005).
- *Arithmetic Geometry*, Tokyo, Japan (2004).
- *International conference on arithmetic geometry*, final conference of the European network *Arithmetic Algeberaic Geometry*, Max-Planck Institut Bonn, Germany (2003).
- *Semaine cohomologique de Rennes, Conférence en l'honneur de Pierre Berthelot*, Rennes, France (2003).
- *Algebraic Number Theory and Related Topics*, RIMS, Kyoto, Japan (2002).
- *International conference on arithmetic geometry*, KIAS, Seoul, Korea (2001).
- *Conférence en l'honneur de Michel Raynaud*, Orsay, France (2001).
- *Théorie de la ramification pour les schémas arithmétiques*, CIRM, Luminy, France (1999).

Organization of conferences

- Co-organizer of the *Franco-Asian summer school on arithmetic geometry in Luminy*, CIRM (France), May 30 - June 3, 2022.
- Co-organizer of the conference *Arithmetic Geometry - Takeshi 60*, on the occasion of Takeshi Saito's 60th birthday, University of Tokyo (Japan), September 6-10, 2021.
- Co-organizer of the conference and the summer school *Arithmetic Geometry in Carthage*, Tunisian Academy Beit al-Hikma, Carthage, in the city of Tunis (Tunisia), June 17-28, 2019.
- Co-organizer of the conference *Arithmetic Geometry : ℓ-adic and p-adic aspects*, University of Tokyo (Japan), September 10-14, 2018.
- Co-organizer of the conference *Arithmetic and Algebraic Geometry* in honor of Ofer Gabber on the occasion of his 60th birthday, IHÉS (France), June 11-15, 2018.
- Co-organizer of the conference *Algebraic geometry* in honor of Arthur Ogus on the occasion of his 70th birthday, IHÉS (France), September 23-25, 2015.
- Co-organizer of the conference *Arithmetic geometry, representation theory and applications*, final conference of the ANR program ThéHopaD, CIRM, Luminy (France), June 22-26, 2015.
- Co-organizer of the *Arithmetic geometry days of IHÉS*, September 2014.
- Co-organizer of the conference *p-adic Hodge theory and beyond*, mid-term conference of the ANR program ThéHopaD, IHÉS (France), September 2013.
- Co-organizer of the summer school *Higgs bundles on p-adic curves and representation theory*, University of Mainz (Germany), September 2012.

— Co-organizer of the conference *Arithmetic Geometry week in Tokyo*, University of Tokyo (Japan), June 2012.
— Co-organizer of the conference *Journées de Géométrie Arithmétique de Rennes*, Université de Rennes 1 (France), Juillet 2009.
— Co-organizer of the conference *Of ramification and vanishing cycles*, University of Tokyo (Japan), September 2007.
— Co-organizer of the conference *Arithmetic, Geometry and Topology*, on the occasion of Larry Breen's 60th birthday, Université Paris 13 (France), December 2004.
— Co-organizer of the conference *Ramification en Géométrie et Arithmétique*, Université Paris 13 (France), September 2002.

Organization of other scientific events

— Head of the Franco-Chinese Algebraic Geometry Program at Tsinghua University since 2018 (this program was initiated by Jean-Marc Fontaine and Luc Illusie in 2003).
— Co-organizer of the *Beijing-Paris-Tokyo Arithmetic Geometry Seminar*, a joint video-seminar organized by IHÉS, the Morningside Center of Mathematics in Beijing and the University of Tokyo, since 2010.
— Co-organizer of the *Courses in Arithmetic and Algebraic Geometry* at IHÉS, from 2011 to 2017.
— Organizer of the *Arithmetic Geometry Seminar* at Université de Rennes 1, from 2008 to 2009.
— Organizer of the seminar on *Crystalline Dieudonné theory*, Université Paris 13, 2006.
— Co-organizer of the seminar on *p-adic Hodge theory and representations with p-adic values*, IHÉS, 2002.
— Organizer of the *Arithmetic Geometry Seminar* at Université Paris 13, from 1997 to 2003.

Special Duties

— Co-editor-in-chef and founder of the Tunisian Journal of Mathematics since 2017.
— Member of the editorial board of Astérisque, from 2010 to 2018.
— Principal Investigator of the project *p-adic Hodge Theory and beyond*, funded by the French National Research Agency (ANR), 2011-2015.
— Cochair of the Core-to-Core program of the Japan Society for Promotion of Science (JSPS) *New developments of Arithmetic Geometry, Motives, Galois theory, and their practical applications*, 2006-2011.
— Member of the Scientific Committee of the Institut des Hautes Études Scientifiques (IHÉS) since 2011.
— Member of the Scientific Committee of the IRMAR (UMR 6625), University of Rennes 1, 2008-2010.
— Member of the Scientific Committee of LAGA (UMR 7539), University of Paris 13, 1997-2004.

Publications

Refereed journals

(1) A. Abbes, T. Bouche, *Sur le théorème de Hilbert-Samuel arithmétique*, C. R. Acad. Sci. Paris **317** (1993), 589-591.

(2) A. Abbes, T. Bouche, *Théorème de Hilbert-Samuel arithmétique*, Annales de l'Institut Fourier **45** (1995), 375-401.

(3) A. Abbes, E. Ullmo, *Comparaison des métriques d'Arakelov et de Poincaré sur $X_0(N)$*, Duke Mathematical Journal **80** (1995), 295-307.

(4) A. Abbes, E. Ullmo, *A propos de la Conjecture de Manin pour les courbes elliptiques modulaires*, Compositio Mathematica **103** (1996), 269-286.

(5) A. Abbes, E. Ullmo, *Auto-intersection du dualisant relatif des courbes modulaires $X_0(N)$*, Crelles Journal, vol **484** (1997), 1-70.

(6) A. Abbes, *Hauteurs et Discrétude [d'après L. Szpiro, E. Ullmo et S. Zhang]*, Séminaire Bourbaki exposé **825**, Astérisque **245** (1997), 141-166.

(7) A. Abbes, *Réduction semi-stable des courbes d'après Artin, Deligne, Grothendieck, Mumford, Saito, Winters, ...*, dans *Courbes semi-stables et groupe fondamental en géométrie algébrique*, J.-B. Bost, F. Loeser et M. Raynaud (éditeurs), Progress in Math. **187**, Birkhauser (2000), 59-110.

(8) A. Abbes, *Cycles on arithmetic surfaces*, Compositio Mathematica **122** (2000), 23-111.

(9) A. Abbes, *The Grothendieck-Ogg-Shafarevich formula for arithmetic surfaces*, Journal of Algebraic Geometry **9** (2000), 529-576.

(10) A. Abbes, T. Saito, *Ramification of local fields with imperfect residue fields*, American Journal of Math. **124** (2002), 879-920.

(11) A. Abbes, T. Saito, *Ramification of local fields with imperfect residue fields II*, Documenta Math. Extra Volume Kazuya Kato's fiftieth Birthday (2003), 5-72.

(12) A. Abbes, A. Mokrane, *Sous-groupes canoniques et cycles évanescents p-adiques pour les variétés abéliennes*, Pub. Math. IHES **99** (2004), 117-162.

(13) A. Abbes, T. Saito, *The characteristic class and ramification of an ℓ-adic étale sheaf*, Inventiones Mathematicae **168** (2007), 567-612.

(14) A. Abbes, T. Saito, *Analyse micro-locale ℓ-adique en caractéristique $p > 0$, le cas d'un trait*, Publ. RIMS, Kyoto Univ. **45** (2009), 25-74.

(15) A. Abbes, T. Saito, *Local Fourier transform and epsilon factors*, Compositio Mathematica **146** (2010), 1507-1551.

(16) A. Abbes, T. Saito, *Ramification and cleanliness*, Tohoku Math. J. **63** (2011), 775-853.

(17) A. Abbes, M. Gros, *Representations of the fundamental group and the torsor of deformations. An overview*, The p-adic Simpson correspondence, Ann. of Math. Stud., **193**, Princeton Univ. Press (2016), 1-26.

(18) A. Abbes, M. Gros, *Representations of the fundamental group and the torsor of deformations. Local study*, The p-adic Simpson correspondence, Ann. of Math. Stud., **193**, Princeton Univ. Press (2016), 27-178.

(19) A. Abbes, M. Gros, *Representations of the fundamental group and the torsor of deformations. Global aspects*, The p-adic Simpson correspondence, Ann. of Math. Stud., **193**, Princeton Univ. Press (2016), 179-305.

(20) A. Abbes, M. Gros, *Covanishing topos and generalizations*, The *p*-adic Simpson correspondence, Ann. of Math. Stud., **193**, Princeton Univ. Press (2016), 485-576.

Books

(21) A. Abbes, Éléments de Géométrie Rigide. Volume I. Construction et étude géométrique des espaces rigides, Progress in Mathematics, **286** (496 pages), Birkhäuser (2011).

(22) A. Abbes, M. Gros, T. Tsuji, The *p*-adic Simpson correspondence, Ann. of Math. Stud., **193** (617 pages), Princeton Univ. Press (2016).

Prepublications

(23) A. Abbes, M. Gros, *Les suites spectrales de Hodge-Tate*, book of 389 pages (2020), arXiv:2003.04714.

(24) A. Abbes, M. Gros, *The relative Hodge-Tate spectral sequence – an overview*, preprint (2020), arXiv:2003.03790.

(25) A. Abbes, *p-adic Galois representations*, notes of a course at Tsinghua University in Beijing (2018).

Conference proceedings

(26) A. Abbes, *Canonical subgroups and p-adic vanishing cycles on abelian varieties*, Algebraic number theory and related topics (Kyoto, 2002), RIMS Kokyuroku **1324** (2003), 149-152.

(27) A. Abbes, *Ramification and cleanliness (joint work with Takeshi Saito)*, RIMS Kokyuroku Bessatsu **B32** (2012), 19-29.

(28) A. Abbes, *The p-adic Simpson correspondence*, Arithmetic Geometry Conference, Oberwolfach Report **38/2012**.