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Curriculum Vitae

A. Education and Diploma

2007-08 : **Post-doc** position on the EU project **SCIEnce** at TU Berlin.
2006-07 : **Research and part time teaching positions** at IUFM and Université de Caen.

2005-06 : **Research and part time teaching positions** at Université de Caen.

2002-05 : **Ph. D. in Pure Mathematics** at Université de Bordeaux 1.

Thesis *: Around a conjecture by B. Gross on the existence of several nonsolvable number fields ramified at exactly one small prime p.*

Advisor : Professor Michel Olivier.

Date: 6 December, 2005, **Bordeaux 1**.
Members of the jury: C. Bachoc (Bordeaux 1), J. Cougnard (Caen), A. Jehanne (Bordeaux 1), S. Louboutin (Marseille), A. C. Movahhedi (Limoges), M. Olivier (Bordeaux1) and M. Pohst (TU Berlin).

2001-02 : **DEA in Pure Mathematics** at Université de Bordeaux 1 / Math-Info.

2000-01 : **CAPES** (**Diploma in Teaching of Mathematics**) at Ecole Normale Supérieure d'Abidjan (Côte d'Ivoire).

1998-00 : **M.S in Pure Mathematics** at Université de Cocody (Abidjan, Côte d'Ivoire).

1995-98 : **Licence and CAP/CPL in Mathematics** at Université de Cocody.

1993-95 : **DUES in Mathematics** at Université de Cocody (Abidjan).

1992-93 : **BAC C** at Lycée Moderne d'Agboville (Côte d'Ivoire).

B. Publications

1. *The nonexistence of nonsolvable octic number fields ramified only at one small prime*. Mathematics of Computation. Vol. 75, no. 255, 1519-1526 July 2006.
2. *Nonic number fields ramified only at one small prime and with a nonsolvable Galois group*. Journal de Théorie des Nombres de Bordeaux **18** (2006), 617-625.
3. *Tables of octic number fields with discriminant* $\pm 2^{\alpha}$. Preprint.

4. *Decic number fields with discriminant $\pm p^{\alpha}$, for p=2, 3, 5 or 7*. Preprint. Submitted to International Journal of Number Theory.
5. *Comment se ramifie un corps de nombres de degré n en une unique petite place p*? Preprint with A. Chazad Movahhedi (2006).

C. Invited Talks

04/2007 *: Decic number fields with discriminant $\pm p^{\alpha}$, for p=2,3,5 or 7*. **TU Berlin**, **Germany.**

07/2006 : *The nonexistence of number fields ramified at only one small prime and with a nonsolvable Galois group in S_n for $n \leq 9$*. Post-graduate researcher colloquium in number theory, **Rennes, France**.

07/2005 : *The nonexistence of nonsolvable octic and nonic number fields ramified only at one small prime p*, 24èmes Journées Arithmétiques, **Marseille, France**.

06/2005 : *Octic number fields ramified at only one small prime and with a nonsolvable Galois group*. Post-graduate student conference at **Bordeaux, France.**

05/2005 : *Octic fields ramified only at one small prime and with a nonsolvable Galois group*. Recent development in computational number theory, **Marseille (Luminy), France**.

D. Contributed Talks

03/2007 : *Decic number fields with discriminant $\pm p^{\alpha}$, for p=2,3,5 or 7*. Number Theory seminar, **Limoges, France.**

11/2006 : *Octic number fields with discriminant 5^{α}*. Post-graduate student seminar, **Caen, France.**

02/2006 : *The nonexistence of number fields ramified at only one small prime and with a nonsolvable Galois group in S_n for $n \leq 9$*. Number Theory seminar, **Lyon, France.**

02/2006 : *Octic (resp. Nonic) primitive number fields ramified only at one small prime p*. Number Theory seminar, **Caen, France.**

01/2006 : *Around a conjecture by B. Gross on the existence of several nonsolvable number fields ramified at exactly one small prime p*. Number Theory seminar, **Limoges, France.**

10/2005 : *The nature of the normalizer of a subgroup generated by a 5-cycle in S_8 (resp. S_9).* Post-graduate student seminar, **Bordeaux, France.**

06/2004 : *Octic primitive number fields ramified only at small prime p*. Post-graduate student seminar, **Bordeaux, France.**

E. Conferences attended

07/2007 : 25th Journées Arithmétiques, **Edinburgh**, **Ecosse.**
06/2007 : 18emes Rencontres Arithmétiques de Caen, **France.**
2006/07 : 7th Algorithmic Number Theory Symposium (ANTS VII), **Berlin**, **Germany**.
2002/06 : Participation to various seminars : Number Theory, Algorithmic and Arithmetic, Cryptology, etc... and various courses of DEA and post-DEA, **Bordeaux** and **Caen**.
11/2004 : The Conference in Honor of Ph. Cassou Nogues, **Bordeaux.**

06/2004 : The Conference in Honor of Jean Fresnel, **Bordeaux**.
03/2004 : Post-graduate researcher colloquium in Number Theory, **Montpellier**.
07/2003 : Journées Arithmétique, **Graz, Autriche**.
01/2003 : Cryptology's summer school, **Bordeaux.**

F. Teaching positions and Experience

2006/07 : Research and part time teaching positions at IUFM where I take part in mathematics school teacher preparation program, and at Université de **Caen** where I taught the Courses: College Analysis and Algebra, Elementary Number Theory, Calculus for Business Sciences. These valuable experiences have afforded me to do research and to have good skills in teaching mathematics.
2005/06 : Research and part time teaching positions at Université de **Caen.** Courses taught: College Analysis and Algebra, Elementary Number Theory, Calculus for Business Sciences.
2004/05 : Part time and temporary teaching positions in mathematics at secondary school Ph. Cousteau, Saint André de Cubzac (Gironde), **France**.
2003/04 : Part time and temporary teaching positions in mathematics at secondary school Jean Rostand, Montpon (Gironde), **France**.
2003/05 : Mathematics Tutor to College student at Université de **Bordeaux 1, France**.
2003/05 : Mathematics Tutor to school students: I assisted school students individually or in a group setting in Mathematics in Bordeaux, **France**.
1999/00 : Teaching position in mathematics at secondary school Namako, Abidjan, **Côte d'Ivoire**.

G. Computer tools

User of Word, Latex, Linux, HTML, XHTML, XML, Openmath etc.. and the C and C++ programming language. User of Pari to program. User of Kant, Sage, Magma and Maple.

H. Other interests

1. Languages : French (mother tongue), English (good), Spanish (low level).
2. Culture : The travels, reading, cinéma, music, participation to humanitarian aid, etc..
3. Sports : play football, go biking, go jogging, play handball etc...

Research Statement

My research in general covers the **Algebraic Number Theory**, the **Algorithmic** and the **Arithmetic**. Also, I work on the finite groups. During my thesis, I established algorithms in Number Theory. we use them for example, to test conjectures for possibly validating or invalidating them, and to produce tables of number fields etc....

I examined the conjecture made by Benedict Gross on the existence of several number fields with a nonsolvable Galois group and which are ramified at exactly one prime p less than 11. Our study treated the case of number fields of degree $n \leq 9$.

The work of John Jones showed that quintic and sextic number fields ramified only at one small prime are always solvable. Also, Sharon Brueggeman showed that septic number fields ramified only at one small prime are always solvable.

The main techniques used in our work are the discriminants bounding techniques and the methods issuing from the geometry of numbers. We eliminated octic and nonic number fields ramified only at 5 by using a method which depends on General Riemann Hypothesis (GRH) or unconditionally by computer search. Our computer searches of number fields with these particular discriminants showed

that only the ramification at p=2 for octic number fields and the ramification at p = 3 for nonic number fields are possible. Note that all of these fields found have a solvable Galois group. We conclude that Gross's question has a negative answer for nonsolvable Galois group inside Sn, for $n \leq 9$. Also, we established tables of octic fields ramified only at 2 and nonic fields ramified only at 3. My preprint submitted to "International Journal of Number Theory" treats the decic number fields ramified only at one prime $p<11$. It follows the works during my thesis. We note that all the decic fields found are ramified only at 5 and have a solvable Galois group. A preprint with Professor A. Movahhedi from the University of Limoges (France) enabled to generalize some results from my thesis.
Now I am in collaboration with Sharon Brueggeman from the University of Tennessee to examine first the existence of nonsolvable number fields of degree 11, degree 12 and then those of degree $n \geq 13$ and which are ramified only at one small prime.