

# Thomas Vidick

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Citizenship: Belgian

RESEARCH INTERESTS      Quantum Computation, Complexity Theory, Cryptography, and Algorithms.

- EDUCATION
- ◇ **University of California, Berkeley**  
Currently pursuing a Ph.D. in Computer Science (2007-present)  
Expected graduation: May '11  
Advisor: Umesh Vazirani  
Relevant classes taken: Machine Learning, Computer Vision, Abstract Algebra, Complexity Theory, Randomized Algorithms, Quantum Computation, Algorithmic Game Theory, Mathematical programming, Algorithmist's toolkit, Coding theory.  
GPA: 3.97/4.0
  - ◇ **University Paris 7**  
Masters in Computer Science (2006-2007)  
Classes taken: Analysis of Algorithms, Cryptography, Quantum Computation, Game Theory, Distributed Algorithms, Coding Theory, and Computational Geometry.  
Ranked 2nd, Grade 19/20  
Master's project: *A study of Entanglement in Quantum Interactive Proof Systems*.  
Advisor : Julia Kempe, LRI, Orsay
  - ◇ **École Normale Supérieure, Paris**  
Magistère [B.Sc.]. Major in Computer Science, Minor in Mathematics (2002-2007)  
Ranked 1st, Grade 19/20

- REFEREED PUBLICATIONS
- ◇ **Parallel Repetition of Entangled Games**  
*Julia Kempe and Thomas Vidick*  
Accepted as a featured talk at QIP'11 (peer-reviewed).  
Submitted, 2010
  - ◇ **Better Gap-Hamming Lower Bounds via Better Round Elimination**  
*Joshua Brody, Amit Chakrabarti, Oded Regev, Thomas Vidick and Ronald de Wolf*  
14th Intl. Workshop on Randomization and Computation (RANDOM), 2010
  - ◇ **Near-optimal extractors against quantum storage**  
*Anindya De and Thomas Vidick*  
42nd ACM symposium on Theory of computing (STOC), 2010  
Accepted short contributed talk to QIP'10
  - ◇ **Entangled games are hard to approximate**  
*Julia Kempe, Hirotsada Kobayashi, Keiji Matsumoto, Ben Toner, and Thomas Vidick*  
49th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2008  
Invited to special issue of SICOMP dedicated to selected FOCS'08 papers (2009)  
Also short contributed talk at QIP'08, Delhi

- ◇ **Using Entanglement in Quantum Multi-Prover Interactive Proofs**  
*Julia Kempe, Hirota Kobayashi, Keiji Matsumoto, and Thomas Vidick*  
Computational Complexity (special issue dedicated to selected CCC'08 papers), Vol. 18(2), p. 273–307 (2009)  
Also appeared in the 23rd IEEE Conference on Computational Complexity (CCC), 2008, and as a long contributed talk at QIP'08, Delhi
- ◇ **Sieve Algorithms for the Shortest Vector Problem are Practical**  
*Phong Nguyen and Thomas Vidick*  
Journal of Mathematical Cryptology, 2(2):181-207, 2008.
- ◇ **On the Asymptotic Height of Heegner Points**  
*Guillaume Ricotta and Thomas Vidick*  
Canadian Journal of Mathematics, 60(6):1406-1436, 2008.

MANUSCRIPTS

- ◇ **More non-locality with less entanglement**  
*Thomas Vidick and Stephanie Wehner*  
Technical report arXiv:1011.5206. Submitted, 2010.
- ◇ **Does ignorance of the whole imply ignorance of the parts? — Large violations of non-contextuality in quantum theory**  
*Thomas Vidick and Stephanie Wehner*  
Technical report arXiv:1011.6448. Submitted, 2010.
- ◇ **A concentration inequality for the overlap of a vector on a large set, with application to communication complexity**  
*Thomas Vidick*  
Available from the author's webpage.
- ◇ **Trevisan's extractor in the presence of quantum side information**  
*Anindya De, Christopher Portmann, Renato Renner, and Thomas Vidick*  
Technical report arXiv:0912.5514 (2009)
- ◇ **Multiplayer XOR games and quantum communication complexity with clique-wise entanglement**  
*Jop Briet, Harry Buhrman, Troy Lee and Thomas Vidick*  
Technical report arXiv:0911.4007 (2009), submitted.

RECENT  
INVITED TALKS  
AND VISITS

- ◇ **iTcs, Tsinghua University, Beijing, September '10**  
Invited to participate in the “China Theory Week” program.
- ◇ **CQT, Singapore, August '10**  
Visiting Stephanie Wehner. Worked on various topics related to quantum cryptography and uncertainty relations.
- ◇ **LRI, Orsay, Paris, July '10**  
Visiting Julia Kempe. Worked on parallel repetition of entangled games.
- ◇ **Caltech, Pasadena, USA, March '10**  
Invited participant in the “Workshop on Cryptography from Storage Imperfections”.
- ◇ **KITP, Santa Barbara, September '09**  
Participant in the “Quantum Information Science” program.
- ◇ **CWI, Amsterdam, June '09**  
Visiting Harry Buhrman. Worked on three-prover XOR games. Also worked with Ronald de Wolf in communication complexity.
- ◇ **Tel-Aviv University, May '09**  
Visiting Julia Kempe. Worked on the complexity class QMA(2).

- ◇ **Caltech, March '09**  
Invited talk on “Entanglement in quantum games”

- SCHOLARSHIPS AND AWARDS
- ◇ Berkeley Regent’s Graduate Fellowship (2007-2008)
  - ◇ Selected to participate in a 10-week exchange with CMI, Chennai, India. Full travel and housing support granted by ENS and CMI (March-May 2007).
  - ◇ 4-year full support undergraduate scholarship from École Normale Supérieure (2002-2007).

- TEACHING EXPERIENCE
- ◇ **2009-2010. Tutoring of undergraduate students** for the introductory computer science courses EECS70 and CS170.
  - ◇ **Fall '08. Teaching Assistant for EECS70**, Discrete Math and Probability.
  - ◇ **2003-2006. Preparation to Oral Exams in Mathematics and Computer Science (Caml)**. Given to students in their second year of University, Classes Préparatoires Saint-Louis, Paris
  - ◇ **2004-2006. Tutoring in mathematics**. Several private students from college and the two first years of university. Intensive courses given to classes of 7 to 15 students preparing for the “Grandes Écoles”.

- PROFESSIONAL SERVICE
- ◇ **Organizer:** Berkeley quantum reading group, Fall '09, Spring '10, Fall '10. Berkeley Theory Student’s seminar, Fall '08.
  - ◇ **Reviewed papers for:** SIAM Journal on Computing; STOC; FOCS; CCC; QIP; Crypto; Quantum Information & Computation.

- REFERENCES
- ◇ **Professor Umesh Vazirani** (advisor), UC Berkeley: vazirani@cs.berkeley.edu
  - ◇ **Professor Julia Kempe** (Master’s thesis advisor), LRI, Orsay: kempe@lri.fr
  - ◇ **Professor Oded Regev**, Tel-Aviv university: odedr@tau.ac.il