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Universiteit Leiden



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Title: Attacks on hash functions and applications

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MARC STEVENS

CURRICULUM VITAE



PERSONAL DETAILS

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DEGREES

PHD

Title of thesis: ‘Attacks on hash functions and applications’
University: Mathematical Institute, Leiden University
Advisors: prof. dr. Ronald Cramer, prof. dr. Arjen Lenstra (EPFL) & dr. Benne de Weger (TU/e)
Date of defense: *expected June 19, 2012*

MSc

Title of thesis: ‘On collisions for MD5’
University: Faculty of Mathematics and Computer Science, Eindhoven University of Technology
Advisors: prof. dr. Henk van Tilborg, dr. Benne de Weger & Gido Schmitz MSc (NBV, Dutch national communications security agency)
Date of defense: August 28, 2007

HONORS, AWARDS AND PRIZES

- Winner of the \$10,000-challenge to construct a single-block collision for MD5 posted by Tao Xie and Dengguo Feng: <http://eprint.iacr.org/2010/643>
- Nominated for *Discoverer of the Year 2011*, Faculty of Science, Leiden University, January 2012
- *CRYPTO 2009 – Best Paper Award*

- *Eindhoven University of Technology – Afstudeerprijs 2008* (best master's thesis university-wide)
- Nominated for *Joop Bautz Information Security Award 2007* (best contribution to dutch information security branch, PvIB, ISACA, NOREA, <http://www.jbisa.nl>)
- Graduated Applied Mathematics *cum laude* (2007)

PUBLICATIONS

- Marc Stevens, *Exact joint local-collision analysis & new collision attacks for SHA-1*, submitted to CRYPTO 2012.
- Marc Stevens, *Single-block collision attack on MD5*, Cryptology ePrint Archive, Report 2012/040, 2012. Winner of the \$10,000-challenge posted by Tao Xie and Dengguo Feng: <http://eprint.iacr.org/2010/643>.
- Marc Stevens, Arjen K. Lenstra and Benne de Weger, *Chosen-prefix Collisions for MD5 and Applications*, to appear in: International Journal of Applied Cryptology (IJACT).
- Marc Stevens, Alexander Sotirov, Jacob Appelbaum, Arjen K. Lenstra, David Molnar, Dag Arne Osvik, and Benne de Weger, *Short Chosen-Prefix Collisions for MD5 and the Creation of a Rogue CA Certificate*, CRYPTO (Shai Halevi, ed.), Lecture Notes in Computer Science, vol. 5677, Springer, 2009, pp. 55–69.
- Marc Stevens, Arjen K. Lenstra, and Benne de Weger, *Chosen-Prefix Collisions for MD5 and Colliding X.509 Certificates for Different Identities*, EUROCRYPT (Moni Naor, ed.), Lecture Notes in Computer Science, vol. 4515, Springer, 2007, pp. 1–22.
- Marc Stevens, *Fast Collision Attack on MD5*, Cryptology ePrint Archive, 2006, Report 2006/104.
- Tanja Lange and Marc Stevens, *Efficient Doubling on Genus Two Curves over Binary Fields*, Selected Areas in Cryptography (Helena Handschuh and M. Anwar Hasan, eds.), Lecture Notes in Computer Science, vol. 3357, Springer, 2004, pp. 170–181.

INVITED TALKS (SELECTED)

- Keynote address, SHARCS 2012, Washington DC, March 2012, *Cryptanalysis of MD5 and SHA-1*.

SOFTWARE

- Marc Stevens, *HashClash project*, an open-source C++ framework for MD5 & SHA-1 differential path construction and chosen-prefix collisions for MD5, 2009–2011, <http://code.google.com/p/hashclash>.