KRISTINA NELSON

Education

Currently: Mathematics PhD Student at Berkeley
Focus: Mathematical Cryptography

Master of Science, Mathematics - UBC (2017),
Honours Mathematics and Computer Science Bachelors - UBC (2015)

Publications and Preprints

Sarah Arpin, Catalina Camacho-Navarro, Kristin Lauter, Joelle Lim, Kristina Nelson, Travis Scholl, Jana Sotáková. *Adventures in Supersingularland. (Preprint)*

Kristina Nelson, József Solymosi, Foster Tom, Ching Wong. *The Number of Rational Points of Hyperelliptic Curves over Subsets of Finite Fields*. Involve, a Journal of Mathematics (2019).

Tjerand Aga Silde, Kristina Nelson, Anushah Hossain. *Where is the web still insecure? Regional scans for HTTPS certificates.* Norwegian Information Security Conference (2018).

Other Research and Work Experience

Chrome Security Google Internship (May - Aug 2019): Worked on the Chrome security team handling mitigations of the Spectre/Meltdown exploits. Built tools to evaluate how effective our defences are in the wild, and extended the types of private user data under protection.

2 Cryptography Google Internships (May - Aug 2016, 2017): Interned at Google on the Production Security cryptography team in Mountain View. Studied and implemented symmetric disk encryption and small-exponent RSA signing algorithms. Worked in C and C++.

Master's Thesis (2016–2017): Proved two special cases of the positive characteristic Dynamical Mordell-Lang Conjecture. Considered the case of a group endomorphism of the k-dimensional multiplicative group of a positive characteristic field. Proved the conjecture when k = 3, and when the matrix of exponents of the endomorphism is similar to a single Jordan block.

3 Other Google Internships (May - Aug 2014, 2015, 2018)
In 2014, built a tool so the Chrome team could rapidly block certain unstable or malicious third party software. In 2015, built out Bluetooth (low energy) support in Chrome on Mac. In 2018, worked on natural language processing for Google Analytics.

Awards

Berkeley Fellowship (2017, 2018)

NSERC Canada Graduate Scholarship Master's Award, 2016
comparable to a NSF GRFP for masters students

UBC Dean of Science Scholarship, 2014
made on faculty recommendation

UBC Faculty of Math, Reginald Palliser-Wilson Scholarship, 2014
made on the recommendation of the department of mathematics

UBC Trek Excellence Scholarship, 2012 & 2013
awarded to the top 5% of the year, faulty and school

NSERC Undergraduate Student Research Award, 2012
comparable to an NSF REU

President’s Entrance Scholarship, 2012