Part I First Workshop on Bitcoin Research

Bitcoin Transactions, Policy and Legal Issues

How Did Dread Pirate Roberts Acquire and Protect his Bitcoin Wealth? .... 3
   Dorit Ron and Adi Shamir

Towards Risk Scoring of Bitcoin Transactions ................................. 16
   Malte Möser, Rainer Böhme, and Dominic Breuker

Challenges and Opportunities Associated – With a Bitcoin-Based Transaction Rating System ................................................. 33
   David Vandervort

Bitcoin: A First Legal Analysis With Reference to German and US-American Law .......................................................... 43
   Franziska Boehm and Paulina Pesch

Bitcoin Security

Empirical Analysis of Denial-of-Service Attacks in the Bitcoin Ecosystem . 57
   Marie Vasek, Micah Thornton, and Tyler Moore

Game-Theoretic Analysis of DDoS Attacks Against Bitcoin Mining Pools . 72
   Benjamin Johnson, Aron Laszka, Jens Grossklags, Marie Vasek, and Tyler Moore

The Bitcoin P2P Network ................................................................. 87
   Joan Antoni Donet Donet, Cristina Pérez-Solà, and Jordi Herrera-Joancomartí

Improving Digital Currencies

Fair Two-Party Computations via Bitcoin Deposits .......................... 105
   Marcin Andrychowicz, Stefan Dziembowski, Daniel Malinowski, and Łukasz Mazurek

Increasing Anonymity in Bitcoin .................................................... 122
   Amitabh Saxena, Janardan Misra, and Aritra Dhar

   Christina Garman, Matthew Green, Ian Miers, and Aviel D. Rubin
Bitco in Poster Abstracts

On Offline Payments with Bitcoin (Poster Abstract) .......................... 159
  Alexandra Dmitrienko, David Noack, Ahmad-Reza Sadeghi, and Moti Yung

One Weird Trick to Stop Selfish Miners: Fresh Bitcoins,
A Solution for the Honest Miner (Poster Abstract) .......................... 161
  Ethan Heilman

From Bitcoin to the Brixton Pound: History and Prospects for Alternative
Currencies (Poster Abstract) .......................................................... 163
  Garrick Hileman

Part II Applied Homomorphic Cryptography
and Encrypted Computing

High-Speed Fully Homomorphic Encryption Over the Integers ............ 169
  Xiaolin Cao, Ciara Moore, Máire O'Neill, Neil Hanley,
  and Elizabeth O'Sullivan

Practical and Privacy-Preserving Policy Compliance for Outsourced Data... 181
  Giovanni Di Crescenzo, Joan Feigenbaum, Debayan Gupta,
  Euthimios Panagos, Jason Perry, and Rebecca N. Wright

Bandwidth Efficient PIR from NTRU ............................................ 195
  Yarkin Doröz, Berk Sunar, and Ghaith Hammouri

Toward Practical Homomorphic Evaluation of Block Ciphers Using Prince...
  Yarkin Doröz, Aria Shahverdi, Thomas Eisenbarth, and Berk Sunar

A Scalable Implementation of Fully Homomorphic Encryption
Built on NTRU ................................................................. 221
  Kurt Rohloff and David Bruce Cousins

Restructuring the NSA Metadata Program .................................... 235
  Seny Kamara

Author Index ................................................................. 249