



# Institutional Sign In

All



ADVANCED SEARCH

Conferences > 2016 IEEE Symposium on Security and Privacy

# Hawk: The Blockchain Model of Cryptography and Privacy-Preserving Smart Contracts

Publisher: IEEE

[Cite This](#)

PDF

Ahmed Kosba ; Andrew Miller ; Elaine Shi ; Zikai Wen ; Charalampos Papamanthou **All Authors**

1333  
Cites in  
Papers

49  
Cites in  
Patents

73704  
Full  
Text Views



## Alerts

Manage Content Alerts  
Add to Citation Alerts

Free

- Abstract**
- Authors
- Figures
- References
- Citations
- Keywords
- Metrics
- More Like This



Down  
PDF

### Abstract:

Emerging smart contract systems over decentralized cryptocurrencies allow mutually distrustful parties to transact safely without trusted third parties. In the event of c... **View more**

### Metadata

#### Abstract:

Emerging smart contract systems over decentralized cryptocurrencies allow mutually distrustful parties to transact safely without trusted third parties. In the event of contractual breaches or aborts, the decentralized blockchain ensures that honest parties obtain commensurate compensation. Existing systems, however, lack transactional privacy. All transactions, including flow of money between pseudonyms and amount transacted, are exposed on the blockchain. We present Hawk, a decentralized smart contract system that does not store financial transactions in the clear on the blockchain, thus retaining transactional privacy from the public's view. A Hawk programmer can write a private smart contract in an intuitive manner without having to implement cryptography, and our compiler automatically generates an efficient cryptographic protocol where contractual parties interact with the blockchain, using cryptographic primitives such as zero-knowledge proofs. To formally define and reason about the security of our protocols, we are the first to formalize the blockchain model of cryptography. The formal modeling is of independent interest. We advocate the community to adopt such a formal model when designing applications atop decentralized blockchains.

**Published in:** 2016 IEEE Symposium on Security and Privacy (SP)

**Date of Conference:** 22-26 May 2016

**DOI:** 10.1109/SP.2016.55

---

 Contents

---



---

Authors



---

Figures



---

References



---

Citations



---

Keywords



---

Metrics

---



CHANGE  
USERNAME/PASSWORD

PAYMENT OPTIONS  
VIEW PURCHASED  
DOCUMENTS

COMMUNICATIONS  
PREFERENCES  
PROFESSION AND  
EDUCATION  
TECHNICAL INTERESTS

US & CANADA: +1 800  
678 4333  
WORLDWIDE: +1 732  
981 0060  
CONTACT & SUPPORT



[About IEEE Xplore](#) [Contact Us](#) [Help](#) [Accessibility](#) [Terms of Use](#) [Nondiscrimination Policy](#) [IEEE Ethics Reporting](#) [Sitemap](#) [IEEE Privacy Policy](#)

## IEEE Account

- » [Change Username/Password](#)
- » [Update Address](#)

## Purchase Details

- » [Payment Options](#)
- » [Order History](#)
- » [View Purchased Documents](#)

## Profile Information

- » [Communications Preferences](#)
- » [Profession and Education](#)
- » [Technical Interests](#)

## Need Help?

- » **US & Canada:** +1 800 678 4333
- » **Worldwide:** +1 732 981 0060
- » [Contact & Support](#)

[About IEEE Xplore](#) [Contact Us](#) [Help](#) [Accessibility](#) [Terms of Use](#) [Nondiscrimination Policy](#) [Sitemap](#) [Privacy & Opting Out of Cookies](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.  
© Copyright 2024 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.