

# Haiyang Xue

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## RESEARCH INTERESTS

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- Theoretical cryptography and its applications. Focus on
  - Post-quantum cryptography
  - Authenticated key exchange
  - Zero knowledge proof

## EDUCATION

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### IIE, Chinese Academy of Sciences

Beijing

*PhD of Cryptography in Information Security*

*Sep. 2012 – July 2015*

- “Lossy Trapdoor Related Primitives and Their Applications in Public Key Encryption.”

### Shandong University

Jinan

*Master in Information Security*

*Sep. 2009 – July 2012*

*Bachelor in Mathematics*

*Sep. 2005 – July 2009*

## EXPERIENCE

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### Post-doctoral Fellow

Feb. 2020 – Present

*The University of Hong Kong*

*Hong Kong*

### Post-doctoral Fellow

Oct. 2018 – Feb. 2020

*The Hong Kong Polytechnic University*

*Hong Kong*

### Cryptography Researcher

July 2015 – Sep. 2018

*IIE, Chinese Academy of Sciences*

*Beijing*

## SELECTED PUBLICATIONS

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**SIAKE**: Supersingular Isogeny based Authenticated Key Exchange

CACR-PQC

- Haiyang Xue, Xianhui Lu, Kunpeng Wang, Song Tian, Xiu Xu, Jingnan He, Bao Li
- Second prize of [Chinese post-quantum cryptography competition](#)

Strongly Secure Authenticated Key Exchange from Supersingular Isogenies

ASIACRYPT 2019

- Xiu Xu, Haiyang Xue, Kunpeng Wang, Man Ho Au, Song Tian

**LAC**: Lattice-based Cryptosystem

NIST-PQC

- Xianhui Lu, Yamin Liu, Dingding Jia, Haiyang Xue, Jingnan He, Zhenfei Zhang, Zhe Liu, Hao Yang, Bao Li, Kunpeng Wang
- [2nd round](#), NIST post-quantum cryptography standardization process.
- First prize of [Chinese post-quantum cryptography competition](#)

Understanding and Constructing AKE via Double-key Key Encapsulation Mechanism

ASIACRYPT 2018

- Haiyang Xue, Xianhui Lu, Bao Li, Bei Liang, Jingnan He

Regularly Lossy Functions and Applications

CT-RSA 2018

- Yu Chen, Baodong Qin, Haiyang Xue

Regular lossy functions and their applications in leakage-resilient cryptography

TCS 2018

- Yu Chen, Baodong Qin, Haiyang Xue

## RESEARCH FUNDING

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PI, Climbing Program	2020 – 2022
• Post-quantum Secure Authenticated Key Exchange	
Co-PI, Science and Technology Major Project of Beijing Municipal Commission of Education	2019 – 2020
• Quantum-resistant public key cryptosystems	
PI, National Natural Science Foundation of China	2017 – 2019
• Lossy Trapdoor Technique and Its Applications to Public Key Cryptography	
PI, National Cryptography Development Fund	2017 – 2019
• Basic Tools of Provable Security in Cryptography	

## ACADEMIC SERVICE

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Reviewer of ASIACRYPT 2015, 2018-2020; FC 2020; PQCrypto 2020; ACISP 2017-2020 etc.

PC member of ProvSec 2020

## AWARDS

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First Prize (LAC.PKE) of Chinese post-quantum cryptography competition.

Second Prizes (SIAKE, LAC.KEX) of Chinese post-quantum cryptography competition.

Best Paper Award IWSEC 2015

Best Paper Award ProvSec 2014

**Please refer the next page for my full publications.**

- [1] Quan Yuan, Puwen Wei, Keting Jia, Haiyang Xue: Analysis of blockchain protocol against static adversarial miners corrupted by long delay attackers. **Sci. China Inf. Sci.** **63(3)** (2020)
- [2] Xiu Xu, Haiyang Xue, Kunpeng Wang, Man Ho Au, Song Tian: Strongly Secure Authenticated Key Exchange from Supersingular Isogenies. **ASIACRYPT (1) 2019**: 278-308
- [3] Daode Zhang, Jie Li, Bao Li, Xianhui Lu, Haiyang Xue, Dingding Jia, Yamin Liu: Deterministic Identity-Based Encryption from Lattice-Based Programmable Hash Functions with High Min-Entropy. **Secur. Commun. Networks** (2019)
- [4] Zhengyu Zhang, Puwen Wei, Haiyang Xue: Tighter Security Proofs for Post-quantum Key Encapsulation Mechanism in the Multi-challenge Setting. **CANS 2019**: 141-160
- [5] Borui Gong, Man Ho Au, Haiyang Xue: Constructing Strong Designated Verifier Signatures from Key Encapsulation Mechanisms. **TrustCom/BigDataSE 2019**: 586-593
- [6] Haiyang Xue, Xianhui Lu, Bao Li, Bei Liang, Jingnan He: Understanding and Constructing AKE via Double-Key Key Encapsulation Mechanism. **ASIACRYPT (2) 2018**: 158-189
- [7] Yu Chen, Baodong Qin, Haiyang Xue: Regularly Lossy Functions and Applications. **CT-RSA 2018**: 491-511
- [8] Yu Chen, Baodong Qin, Haiyang Xue: Regular lossy functions and their applications in leakage-resilient cryptography. **Theor. Comput. Sci.**: 13-38 (2018)
- [9] Shuai Zhou, Haiyang Xue, Daode Zhang, Kunpeng Wang, Xianhui Lu, Bao Li, Jingnan He: Preprocess-then-NTT Technique and Its Applications to Kyber and NewHope. **Inscrypt 2018**: 117-137
- [10] Daode Zhang, Kai Zhang, Bao Li, Xianhui Lu, Haiyang Xue, Jie Li: Lattice-Based Dual Receiver Encryption and More. **ACISP 2018**: 520-538  
**Before 2017**
- [11] Daode Zhang, Bao Li, Yamin Liu, Haiyang Xue, Xianhui Lu, Dingding Jia: Towards Tightly Secure Deterministic Public Key Encryption. **ICICS 2017**: 154-161
- [12] Haiyang Xue, Yamin Liu, Xianhui Lu, Bao Li: Lossy Projective Hashing and Its Applications. **INDOCRYPT 2015**: 64-84
- [13] Jingnan He, Bao Li, Xianhui Lu, Dingding Jia, Haiyang Xue, Xiaochao Sun: Identity-Based Lossy Encryption from Learning with Errors. **IWSEC 2015**: 3-20
- [14] Haiyang Xue, Bao Li, Xianhui Lu, Kunpeng Wang, Yamin Liu: On the Lossiness of  $2^k$ -th Power and the Instantiability of Rabin-OAEP. **CANS 2014**: 34-49
- [15] Haiyang Xue, Xianhui Lu, Bao Li, Yamin Liu: Lossy Trapdoor Relation and Its Applications to Lossy Encryption and Adaptive Trapdoor Relation. **ProvSec 2014**: 162-177
- [16] Haiyang Xue, Bao Li, Xianhui Lu, Dingding Jia, Yamin Liu: Efficient Lossy Trapdoor Functions Based on Subgroup Membership Assumptions. **CANS 2013**: 235-250