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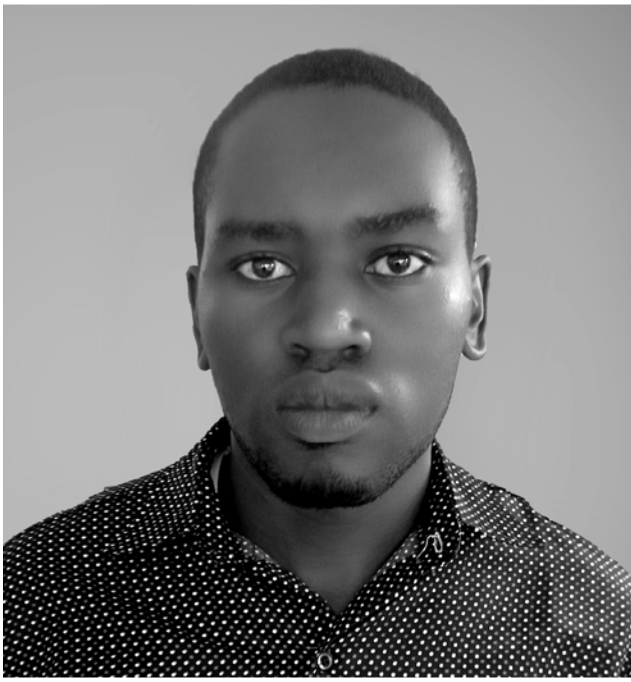

Research field

Cybersecurity

PhD title

Arithmetic of algebraic curves and post quantum cryptography

Keywords

- Isogeny
- Post quantum cryptography
- Supersingular elliptic curve
- Higher dimension isogeny

Summary

The aim of cryptography is to ensure the information confidentiality, undeniability and data integrity. Modern cryptographic protocols are based on pairs (public key, private key), a public key being linked to the associated private key by mathematical properties. For such a protocol to be secure, it must be difficult to find the private key from its public key. In this thesis, we are interested in protocols for which finding a private key from the associated public key involves computing an isogeny between two elliptic curves. More precisely, we study the arithmetic of algebraic curves in a general way with their impacts on the security of protocols based on isogeny computation.

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