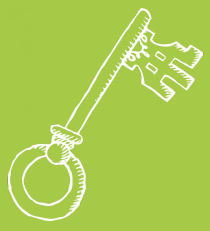


Cryptanalysis of Symmetric Primitives

Advisor: **Maria Eichlseder**

Motivation

Cryptanalytic attacks define the security of cryptographic algorithms, and understanding them is crucial to understand cryptographic design.

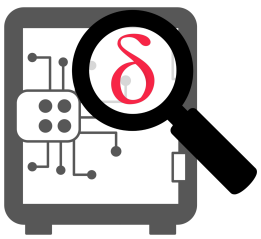
In our research on secure symmetric cryptography, we typically work on:

- Different symmetric primitives: **block ciphers**, permutations, tweakable block ciphers, …
- Different security notions: mathematical **cryptanalytic security**, implementation security and resilience
- Different goals: **finding attacks** or proving security properties
- Different analysis techniques: **differential, linear, integral, algebraic, …**
- Different approaches: **pen-and-paper**, theory, computer-aided cryptanalysis with **MILP/SAT solvers** or dedicated **automated tools**, …

Even if no specific cryptanalysis topic is currently listed on the ISEC topics list, we usually have some currently open questions suitable for master's theses or projects – just ask us to see if one of them matches your interests.

Typical Goals and Tasks

- Get familiar with the basics and existing methods
- Develop improved methods
- Perform some experiments and evaluate them



Literature

- *depends on topic*

Courses & Deliverables

☑ **Master Project**
Project code
Report
Presentation

– OR –

☑ **Master's Thesis**
+ DiplomandInnenseminar (CS)
Initial presentation
Project code
Thesis (60+ pages)
Final presentation

Recommended if you're studying

☑ CS ☑ ICE ☑ SEM

Prerequisites

- *Cryptography*
- (Optional) *Cryptanalysis*
- Programming (typically Python)

Advisor Contact

maria.eichlseder@tugraz.at