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Timing Attacks against the Syndrome Inversion in Code-based Cryptosystems

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Abstract: In this work we present new timing vulnerabilities that arise in the inversion of the error syndrome through the Extended Euclidean Algorithm that is part of the decryption operation of code-based Cryptosystems. We analyze three types of timing attack vulnerabilities theoretically and experimentally: The first allows recovery of the zero-element of the secret support, the second is a refinement of a previously described vulnerability yielding linear equations about the secret support, and the third enables to retrieve non-linear equations about the secret support. Furthermore, we analyze theoretically the limitations applying to actual attacks based on the information gained in such manner.

Category / Keywords: implementation / side channel attack, timing attack, post quantum cryptography, code-based cryptography

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