An Online Authenticated Encryption scheme with an Optimal Single-Keyed Inverse-Free Construction

DIAC 2016, Nagoya, Japan

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Indian Statistical Institute, Kolkata

27 September 2016

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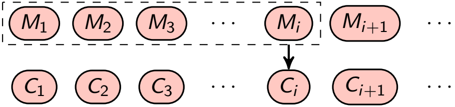

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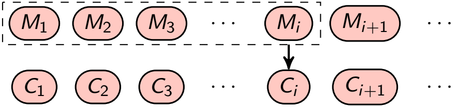

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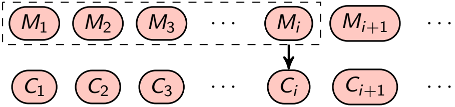

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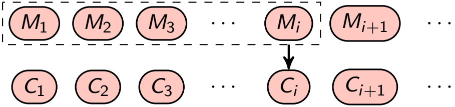

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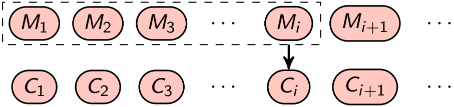
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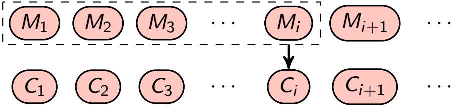

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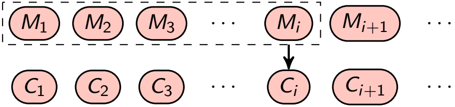

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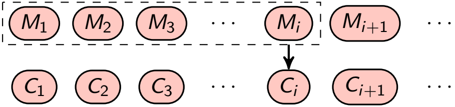

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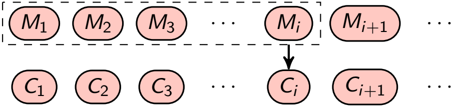

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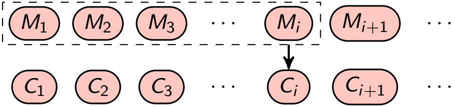

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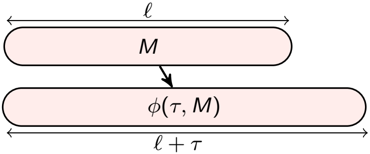

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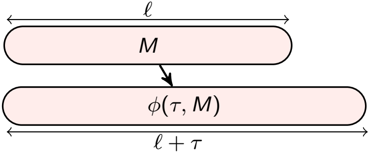

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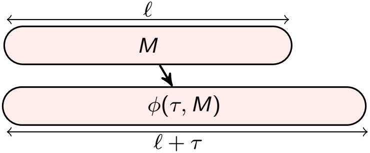

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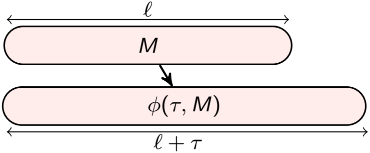

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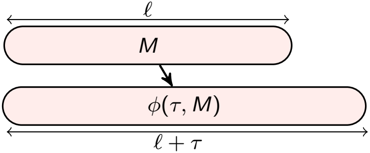

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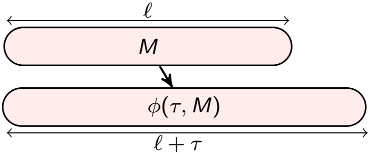

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  - (τ, A, C) is valid when $\boxed{P^{-1}(A, C) \in \text{range of } \phi(\tau,\cdot)}$

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  - By SPRP property, no help in distinguishing attack

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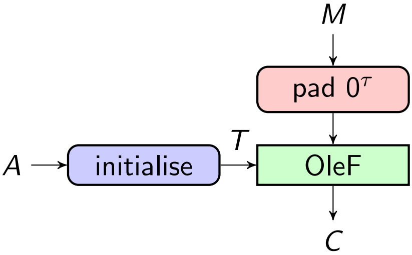

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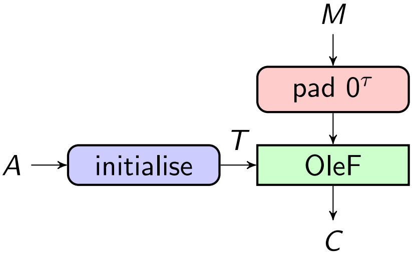

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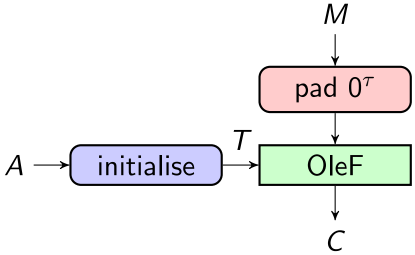

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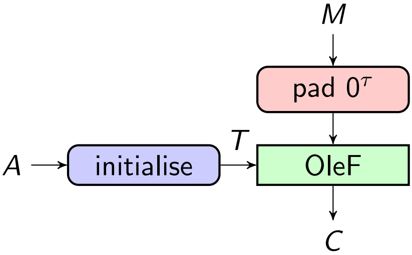

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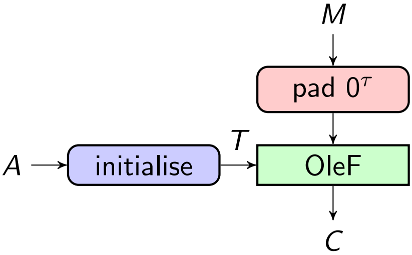

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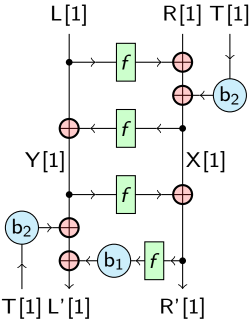

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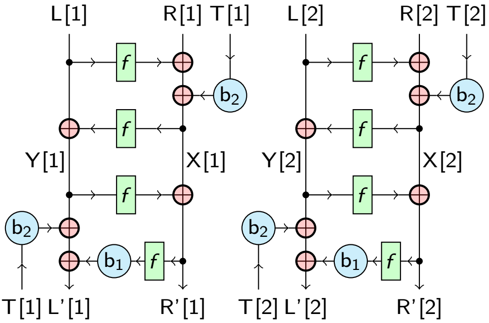

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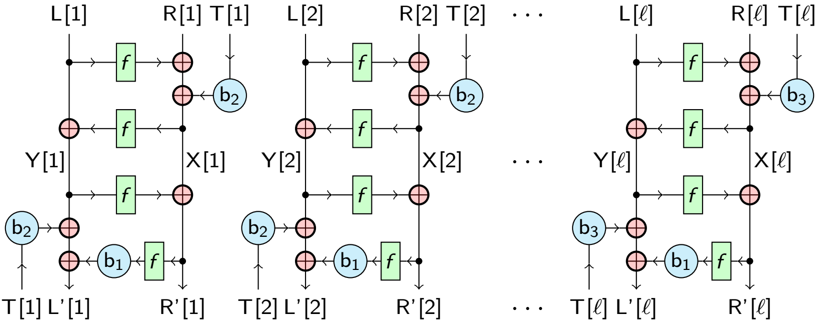
OleF: A tweakable diblock-online cipher



T[1] is the tweak $\quad T[2] = X[1] \oplus Y[1] \quad T[\ell] = X[\ell-1] \oplus Y[\ell-1]$

Figure: Tweakable OleF for ℓ Complete Diblocks

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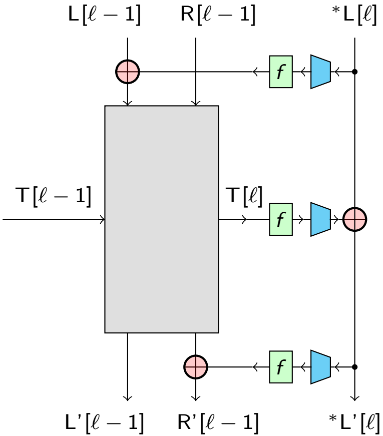

Figure: Tweakable OleF for Partial Diblocks, where $^{*}L[\ell]$ has less than n bits

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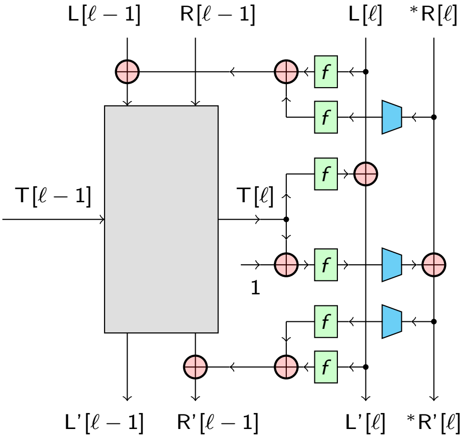

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Getting Tweak from Associated Data

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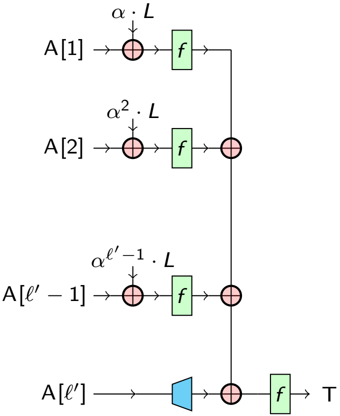

Figure: Obtaining tweak T from Associated Data

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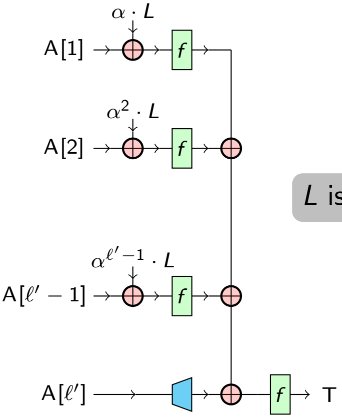

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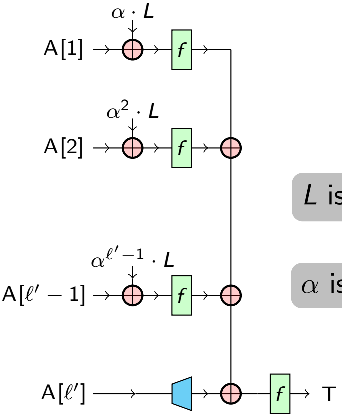

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α is a primitive element

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- provably secure

Thank you for your attention.

Judge a man by his questions rather than his answers. [Voltaire]