# Construction of partial unit-memory MDP convolutional codes with low encoding and decoding complexity

Julia Lieb
TU Ilmenau, Germany

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Maximum Distance Profile (MDP) convolutional codes are error-correcting codes that can correct a maximum amount of errors for a specific delay constraint. To minimize encoding and decoding complexity when using MDP codes, researchers have been trying to construct these codes over possibly small finite fields, which turns out to be a difficult task. However, up to our knowledge, other aspects influencing complexity have not been investigated yet.

We present constructions for partial unit-memory MDP codes with reduced encoding and decoding complexity via structured and sparse generator matrices over small finite fields. In particular, we present a matrix completion framework that extends a structured MDS matrix over a small field to a sparse sliding generator matrix of an MDP code.

This is joint work with Sakshi Dang, Okko Makkonen, Pedro Soto and Alex Sprintson.