

Elektrotechnik-Elektronik-Informationstechnik

# EEI KOLLOQUIUM

## Approximating Decoding Thresholds of Punctured LDPC Code Ensembles on the AWGN Channel

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**Diskussionsleitung: Prof. Dr.-Ing. J. Huber**

We present an efficient way to predict iterative belief propagation (BP) decoding thresholds of randomly punctured low-density parity-check (LDPC) code ensembles on the binary-input additive white Gaussian noise channel (AWGNC), given only the BP threshold of the mother code ensemble on the binary erasure channel (BEC) and the code design rate. We show that the predictions are accurate by comparing them with values calculated by discretized density evolution for a variety of puncturing fractions. We find that the strength and suitability of an LDPC code ensemble for random puncturing over the AWGNC with respect to iterative decoding threshold is completely determined by a single constant, and this behavior is demonstrated using both LDPC block code and spatially coupled LDPC code ensembles.