

Optional Fixed Precoder

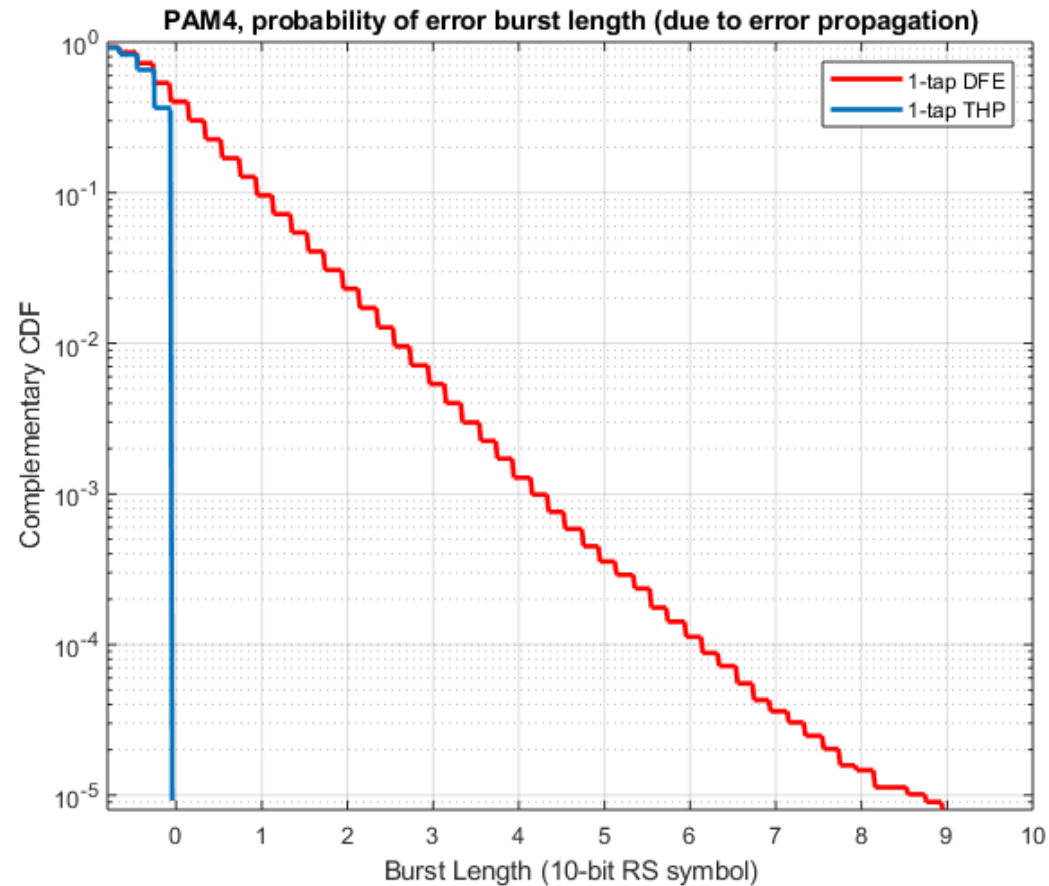
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Benefits of Transmit Precoder

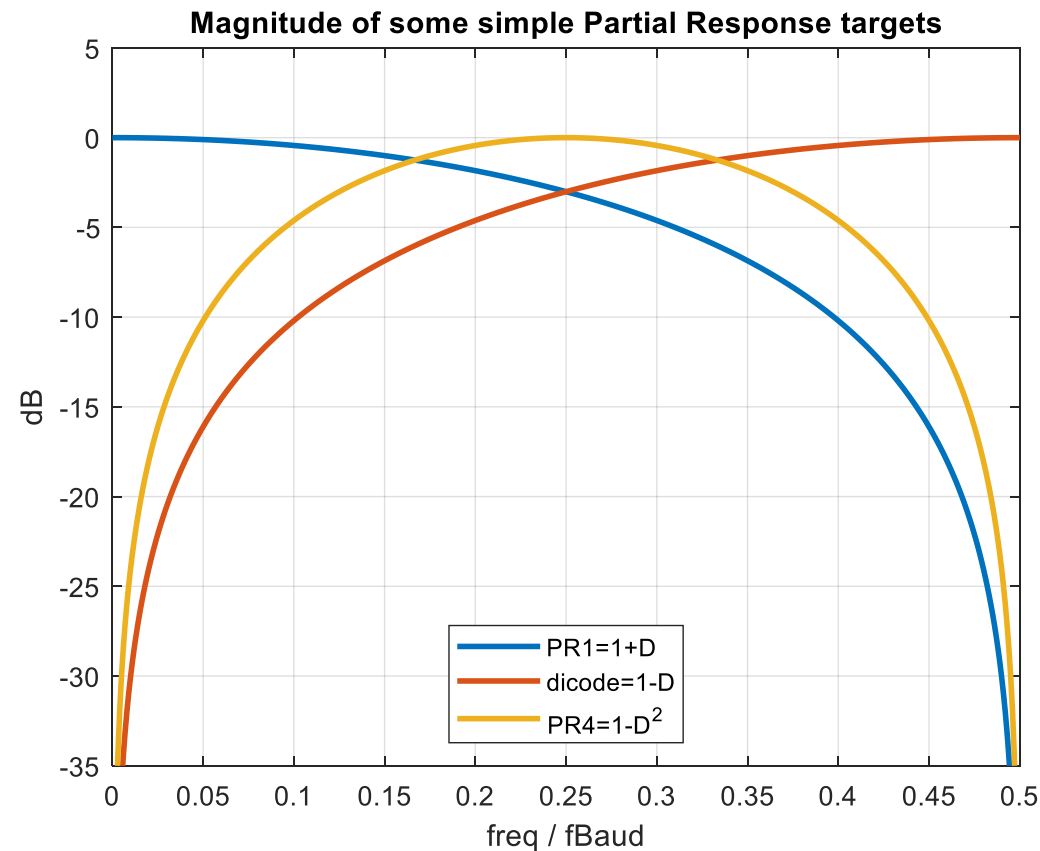
- Very simple implementation
- No DFE Error Propagation
- No expansion of transmit constellation
- No increase to slicer levels
- No extra Reed-Solomon error correction to mitigate error propagation
- Lower latency without additional FEC
- Included in Clause 94 (100G copper backplane)
 - See 802.3 – 94.2.2 PMA Transmit Functional Specifications
- Adopted by 802.3cd for PAM-4 50/100/200 Gb/s Ethernet
 - See http://www.ieee802.org/3/cd/public/July16/hegde_3cd_01_0716.pdf

PAM-4 Burst Error Propagation



- Simulation setup same as “shen_3bp_01a_0514.pdf” (1000BASE-T1)
- Input burst length = 50 ns (~56 symbols)

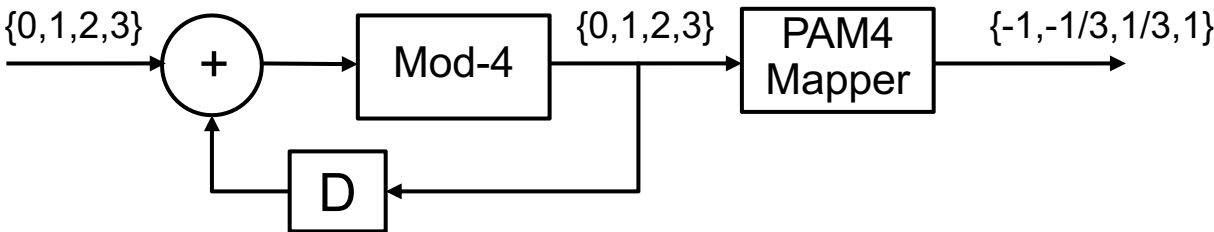
Simple Partial Response Targets



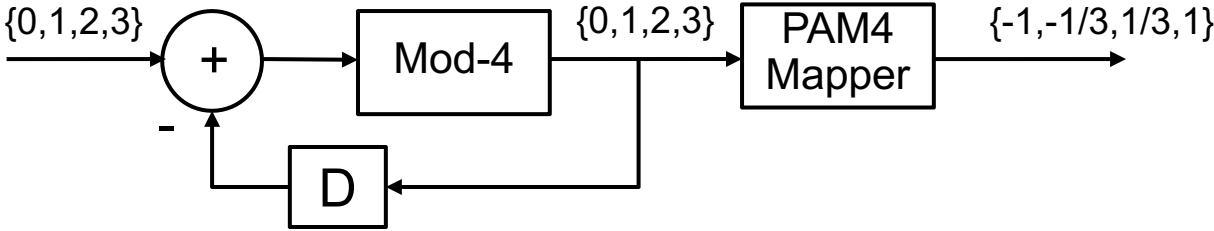
- Choose PR Target which best matches channel requirements
- PR1 target best fit for 802.3ch channel if low high-pass corner & white noise
- Dicode and PR4 good options in some noise environments

Simple Precoder Options for PR Channels

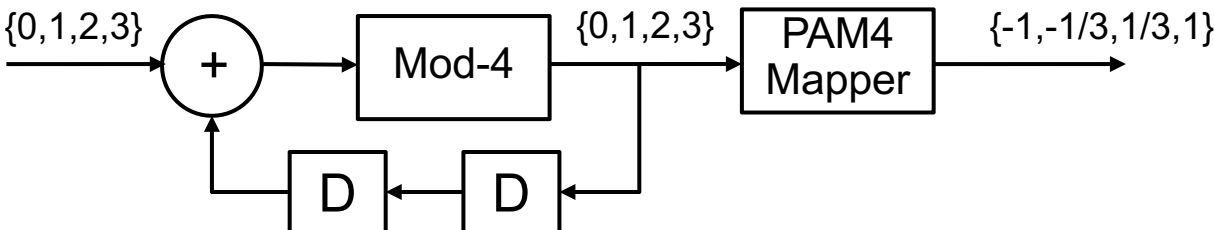
- Precoder for 1-D



- Precoder for 1+D

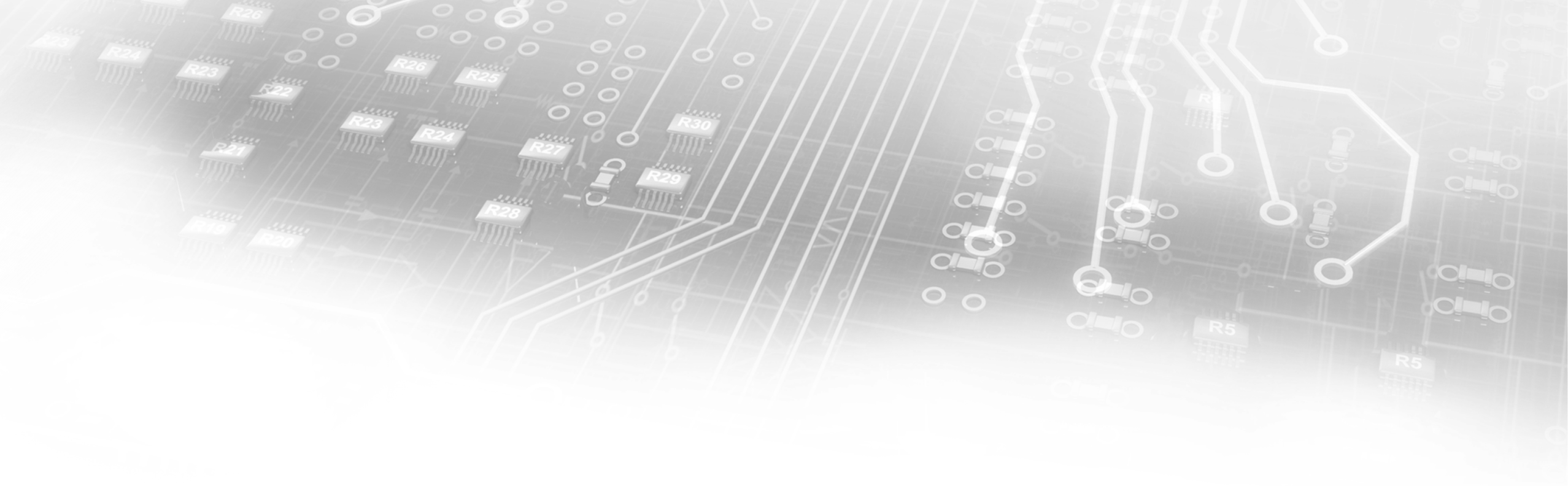


- Precoder for 1-D²



Optional Fixed Precoder Proposal

- Request link partner to transmit using 1 of 4 options:
 - No precoder
 - Precoder for 1-D Channel
 - Precoder for 1+D Channel
 - Precoder for 1-D² Channel
- Specify mode using InfoField during training sequence
- Transition to precoder during link-up (similar to 10GBASE-T)
- Use modified clause 94 or subclause from 802.3cd:
 - 120.5.7.2 Precoding for PAM4 encoded lanes



THANK YOU

