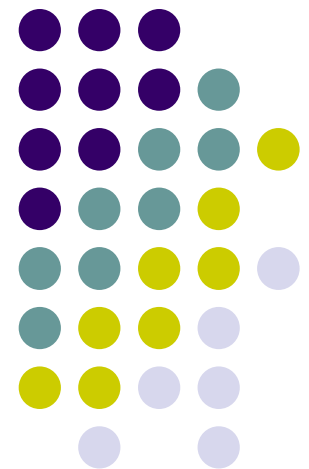


Modeling and Simulation of Data Transmission in an ADSL Transceiver

Embedded Software Systems
Literature Survey Briefing

By Elmustafa Erwa
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Overview



- Introduction to ADSL Technology
- ADSL Transceiver Architecture
- Block Diagram Overview
- Models of Computation
- Proposed Work

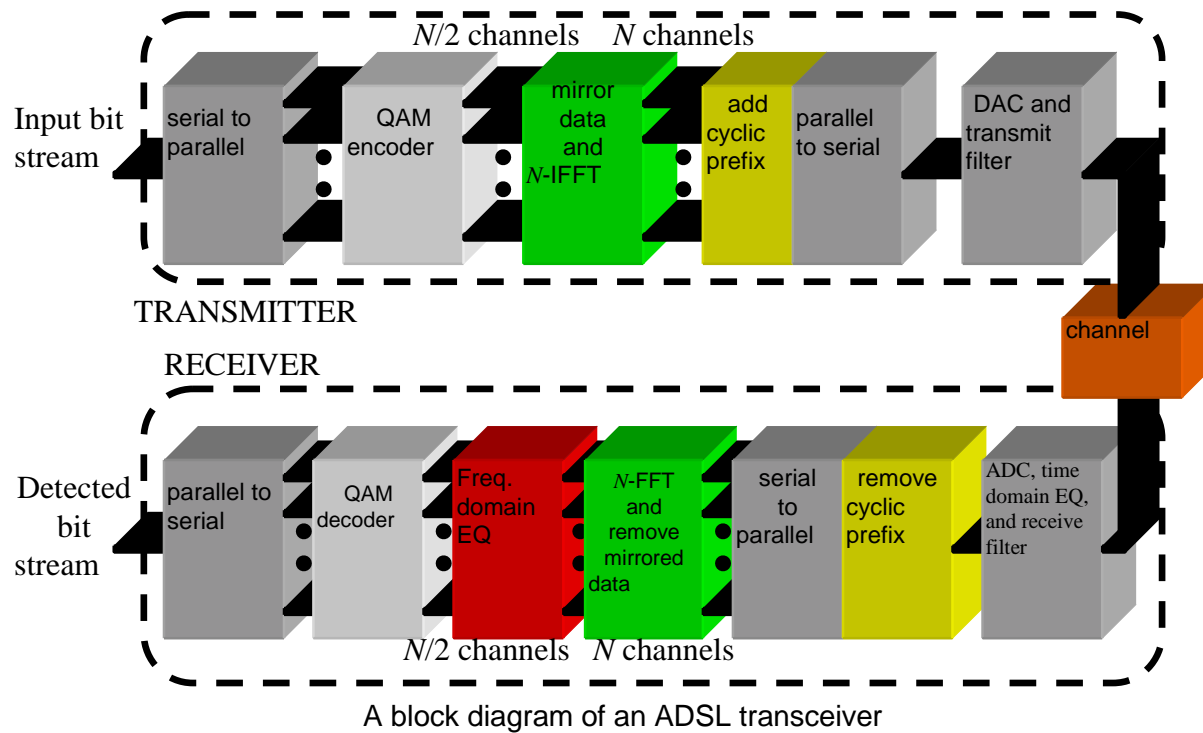


Introduction to ADSL

- Asymmetric Digital Subscribers Lines
- High-rate digital data over existing ordinary telephone lines
- Simultaneous high-speed data transmission and normal telephone services
- Data Transmission up to:
 - 10 Mbps downstream (ISP to customer)
 - 6 Mbps upstream (customer to ISP)



ADSL Transceiver Architecture



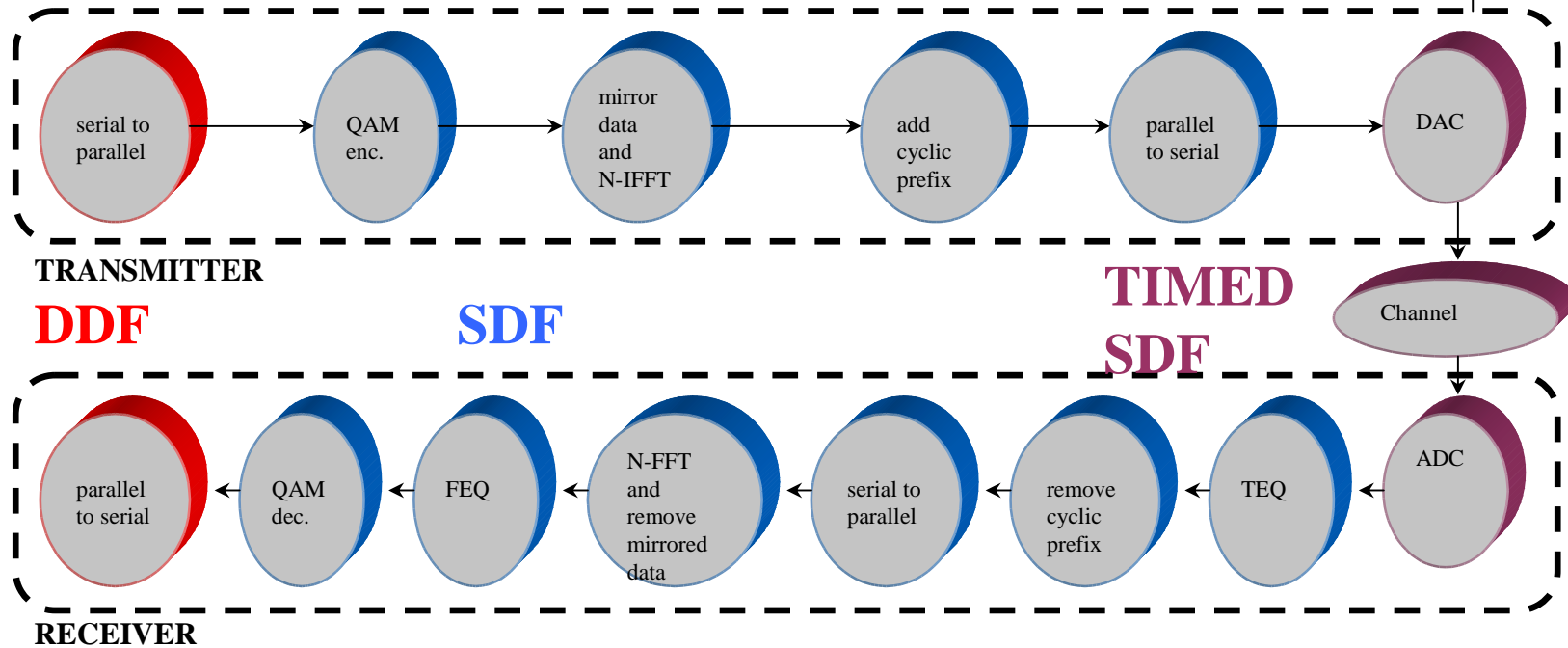
- Quadrature Amplitude Modulation (QAM)
- Channel Modeled as a FIR filter



Block Diagram Overview

- Quadrature Amplitude Modulation
- DMT: generate orthogonal channels for optimal bit allocation
 - Inverse Fast Fourier Transform
 - Fast Fourier Transform
- Cyclic Prefix Extension: Intersymbol interference mitigation
- Equalization: channel effects suppression

Models of Computation



- DDF: initialization and adaptive bit allocation
- SDF: best for DSP applications
- Timed SDF: modeling continuous time



Proposed Work

- Model ADSL Transceiver and the channel using SDF
- Extend model to include DDF and Timed SDF if time permits
- Use LabVIEW to simulate the system and evaluate the bit error rate (BER)

Questions and Answers

