

# Short-Data-Record Bit-Error-Rate Estimation of DS/CDMA Receivers

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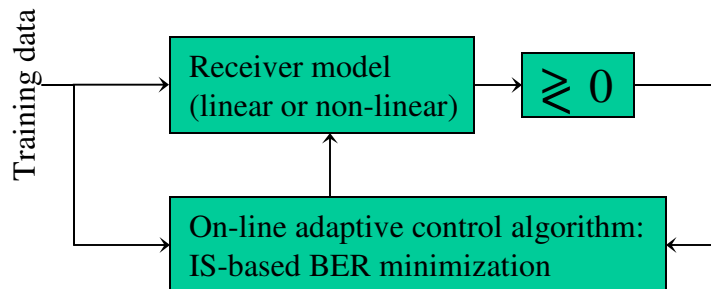
## Objective

- Accelerated bit-error-rate (BER) optimization of receiver designs
- On-line receiver-BER estimation that:
  - Assumes *no* knowledge of the received signal statistics
  - Requires *short* training sequences

## Technical Innovations

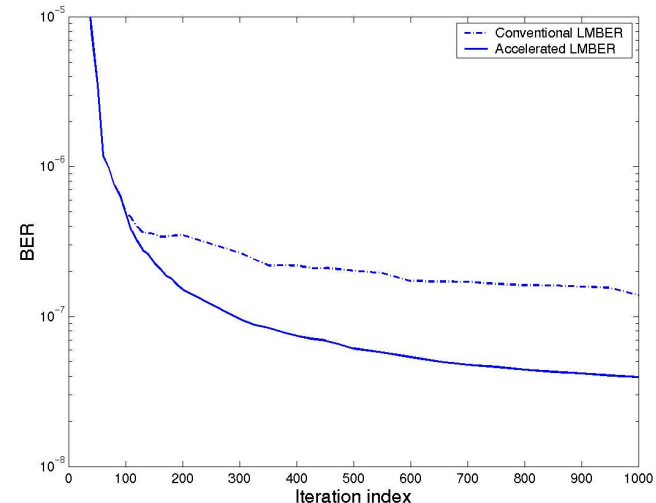
- Importance-Sampling-based short-data-record BER estimation
- Importance-Sampling principles used for system design optimization
- On-line BER-optimization method of an arbitrary receiver structure (linear or non-linear)

## Novel Framework



- Adaptive control algorithm: Importance-Sampling (IS)-based short-data-record BER estimation through controlled partial cancellation of desired-signal

## Application: Accelerated recursive Linear Minimum-BER filtering



BER of the conventional LMBER and the accelerated LMBER as a function of the iteration index (7 users, SNRs = 16, 8, 10, 12, 14, 16, 18 dB, processing gain 16, 100 independent runs).