Unit-2

A Presentation by Schäffner Harald

Rake receiver

Rake receiver

- If, in a mobile radio channel reflected waves arrive with small relative time delays, self interference occurs.
- Direct Sequence (DS) Spread Spectrum is often claimed to have particular properties that makes it less vulnerable to multipath reception.
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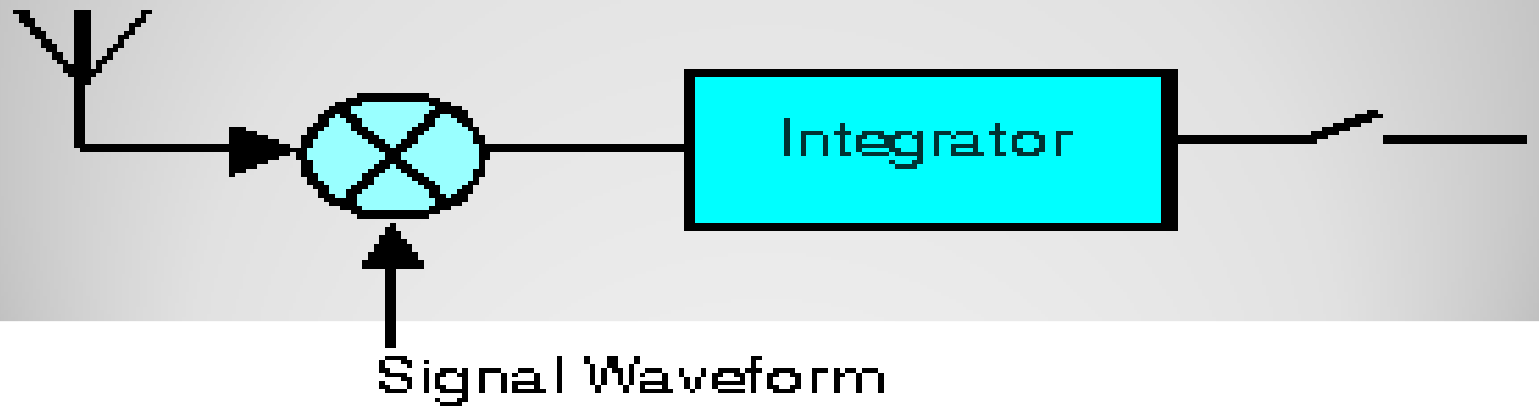
- In particular, the rake receiver architecture allows an optimal combining of energy received over paths with different.

- It avoids wave cancellation (fades) if delayed paths arrive with phase differences and appropriately weighs signals coming in with different signal-to-noise ratios.

- The rake receiver is designed to optimally detected a DS-CDMA signal transmitted over a dispersive multipath channel. It is an extension of the concept of the matched filter.
- Figure: Matched filter receiver for AWGN channel.



Equalization, Diversity, and Channel Coding

- •Three techniques are used independently or in tandem to improve receiver signal quality

- •Equalization compensates for ISI created by multipath with time dispersive channels (W>BC) ¾Linear equalization, nonlinear equalization

- •Diversity also compensates for fading channel impairments, and is usually implemented by using two or more receiving antennas ¾Spatial diversity, antenna polarization diversity, frequency diversity, time diversity