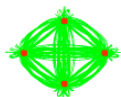


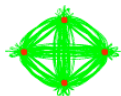
Single Carrier Frequency Division Multiple Access (SC-FDMA) for Filter Bank Multicarrier Communication Systems

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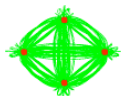
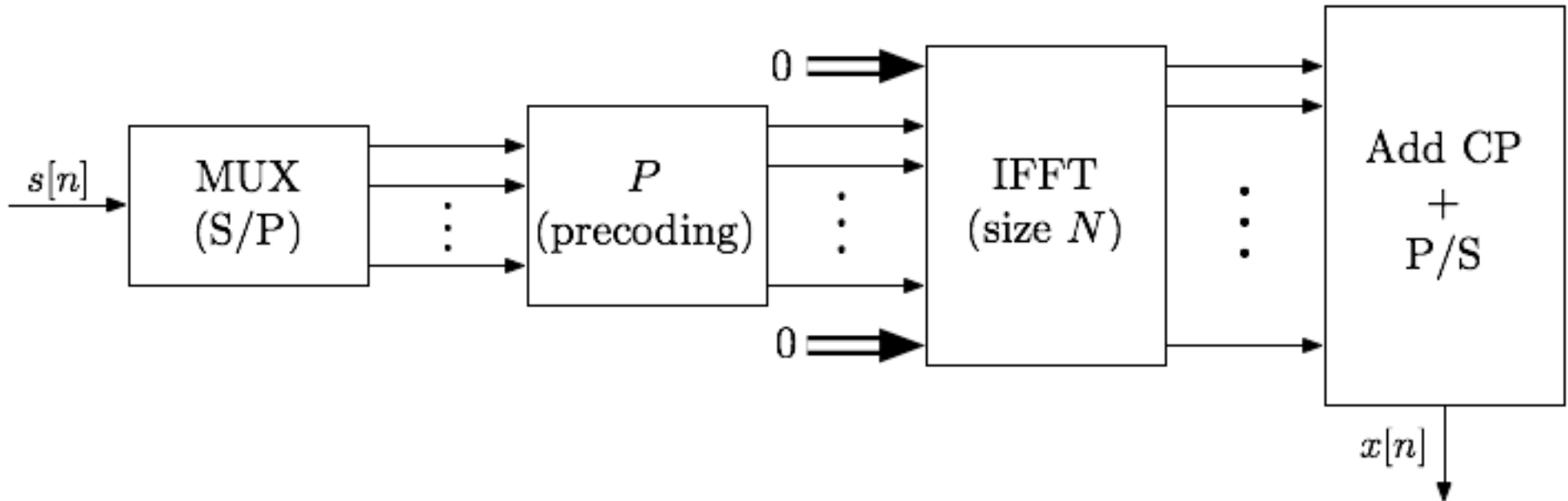
Outline

- SC-FDMA
- SC-FBMC
- Numerical results
- Conclusion



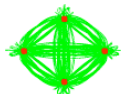
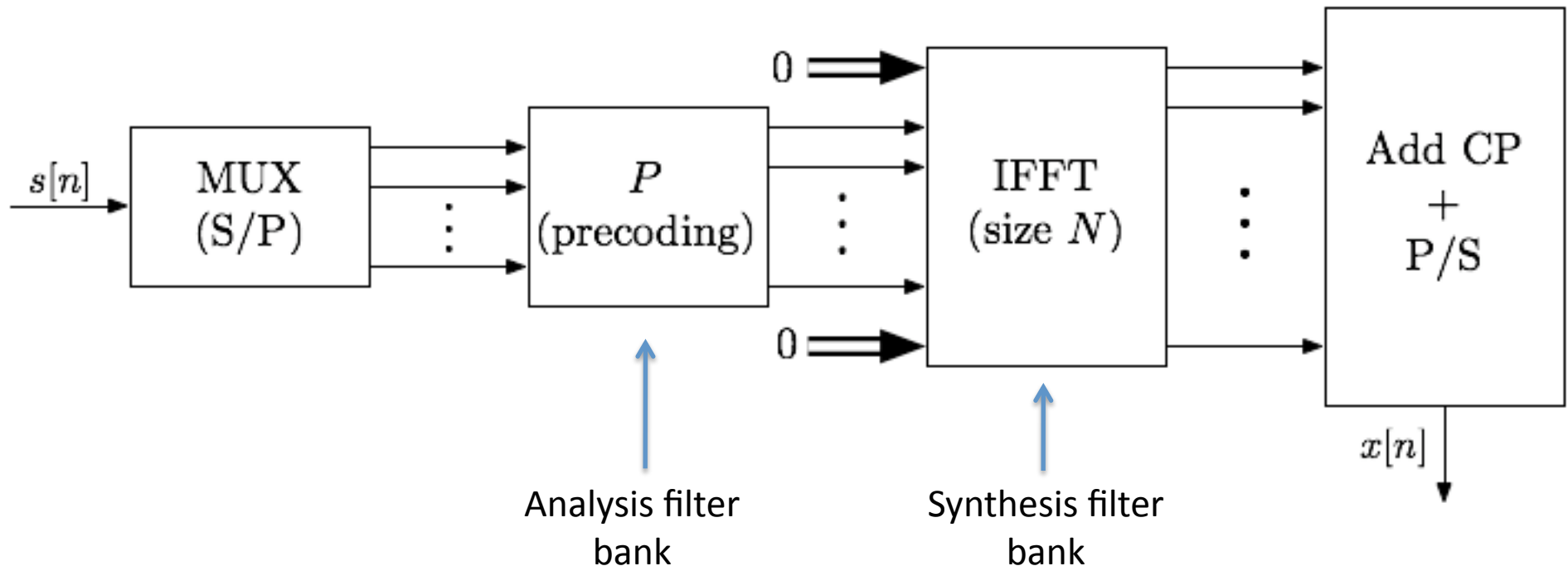
SC-FDMA

SC-FDMA (Single carrier OFDM), proposed in 3GPP LTE, is used to reduce peak-to-average power ratio (PAPR)

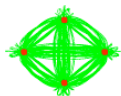
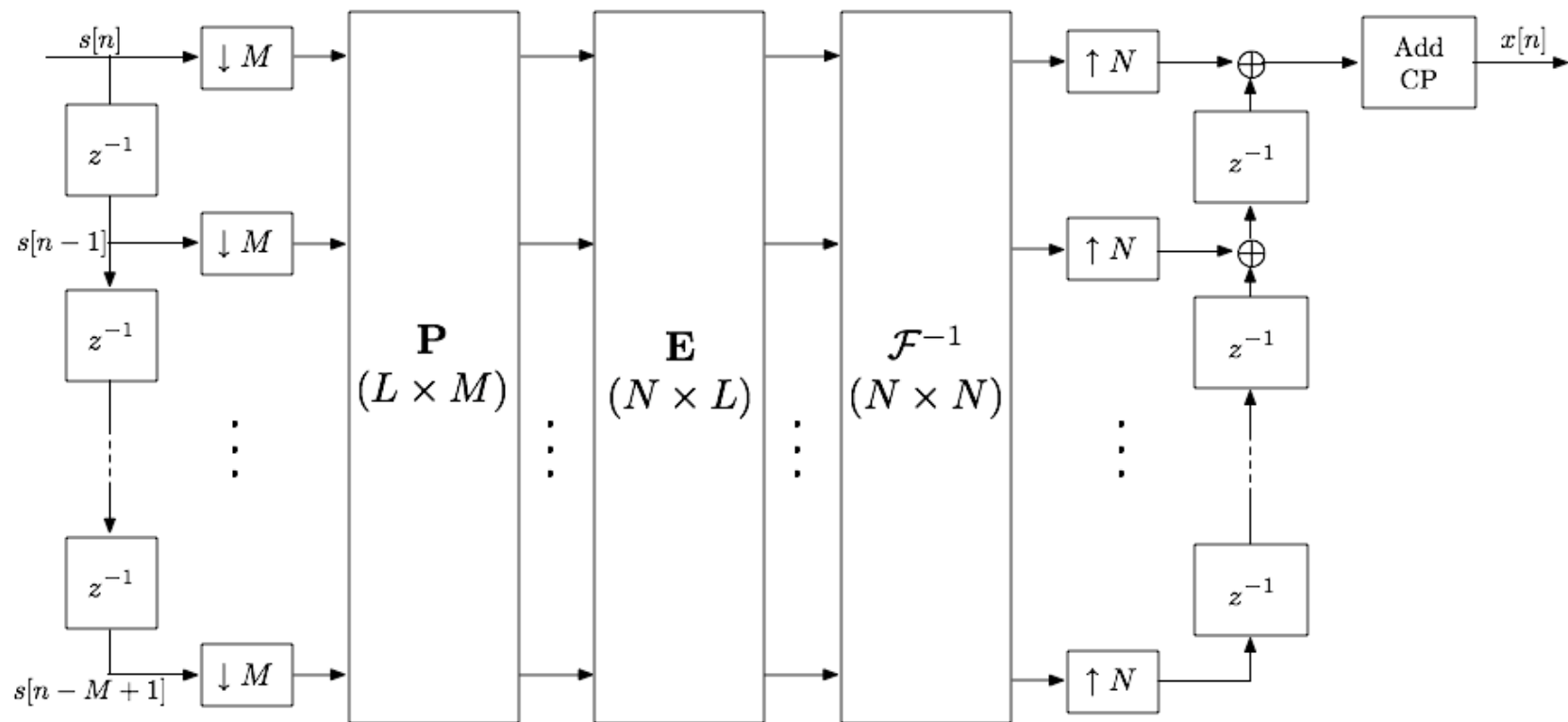


SC-FDMA

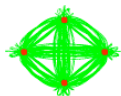
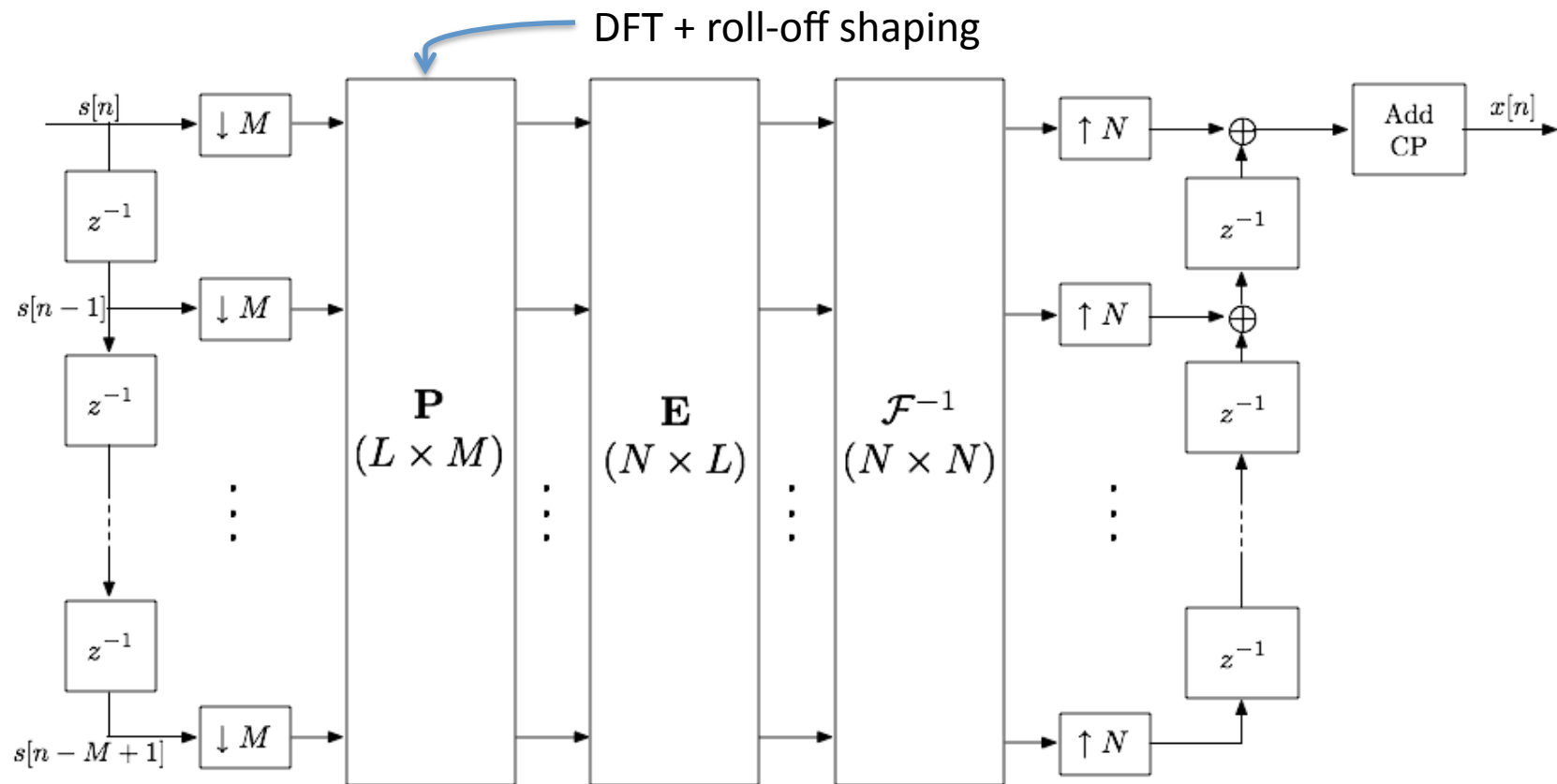
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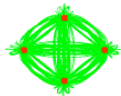
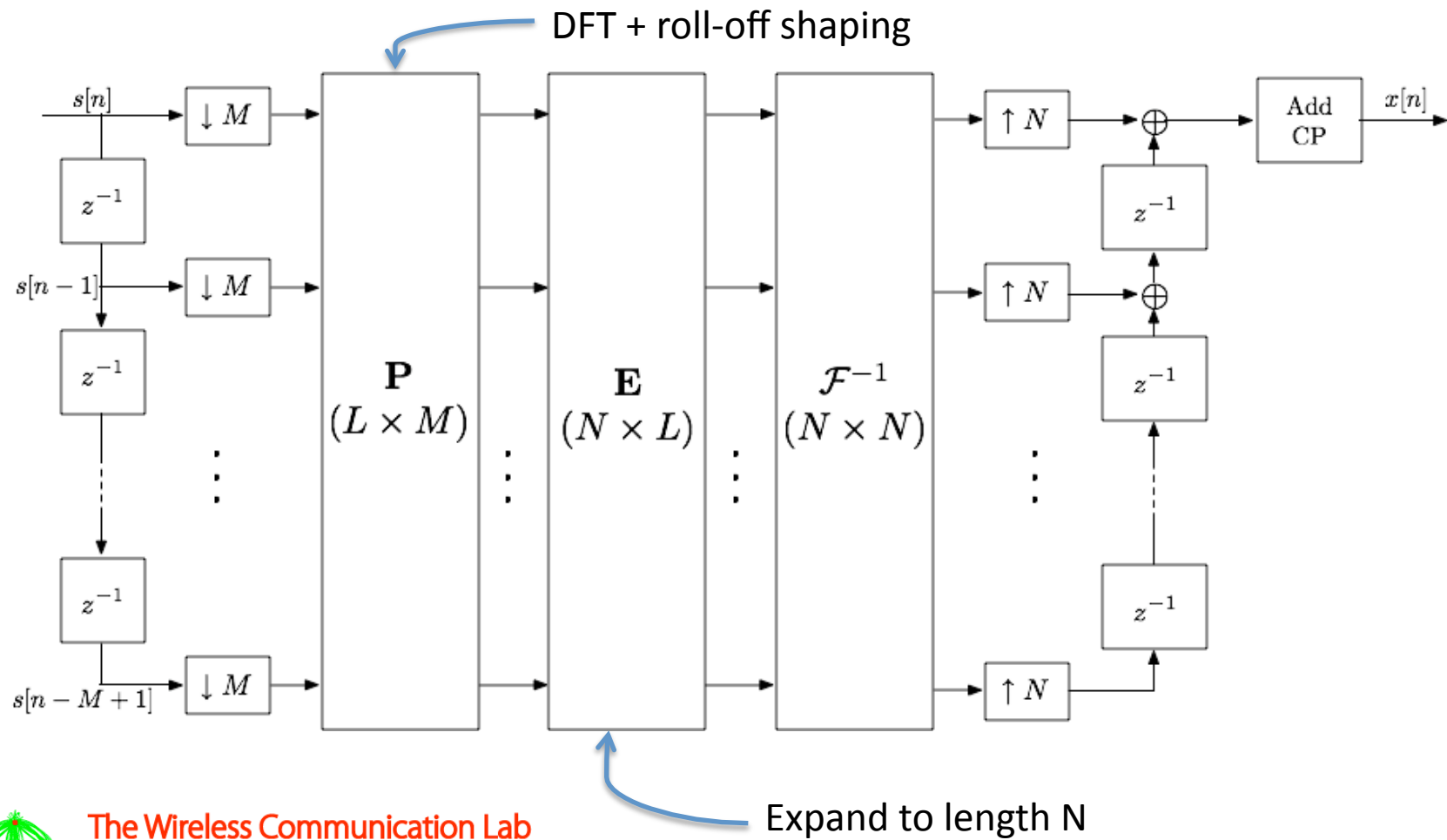
SC-FDMA



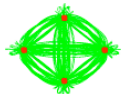
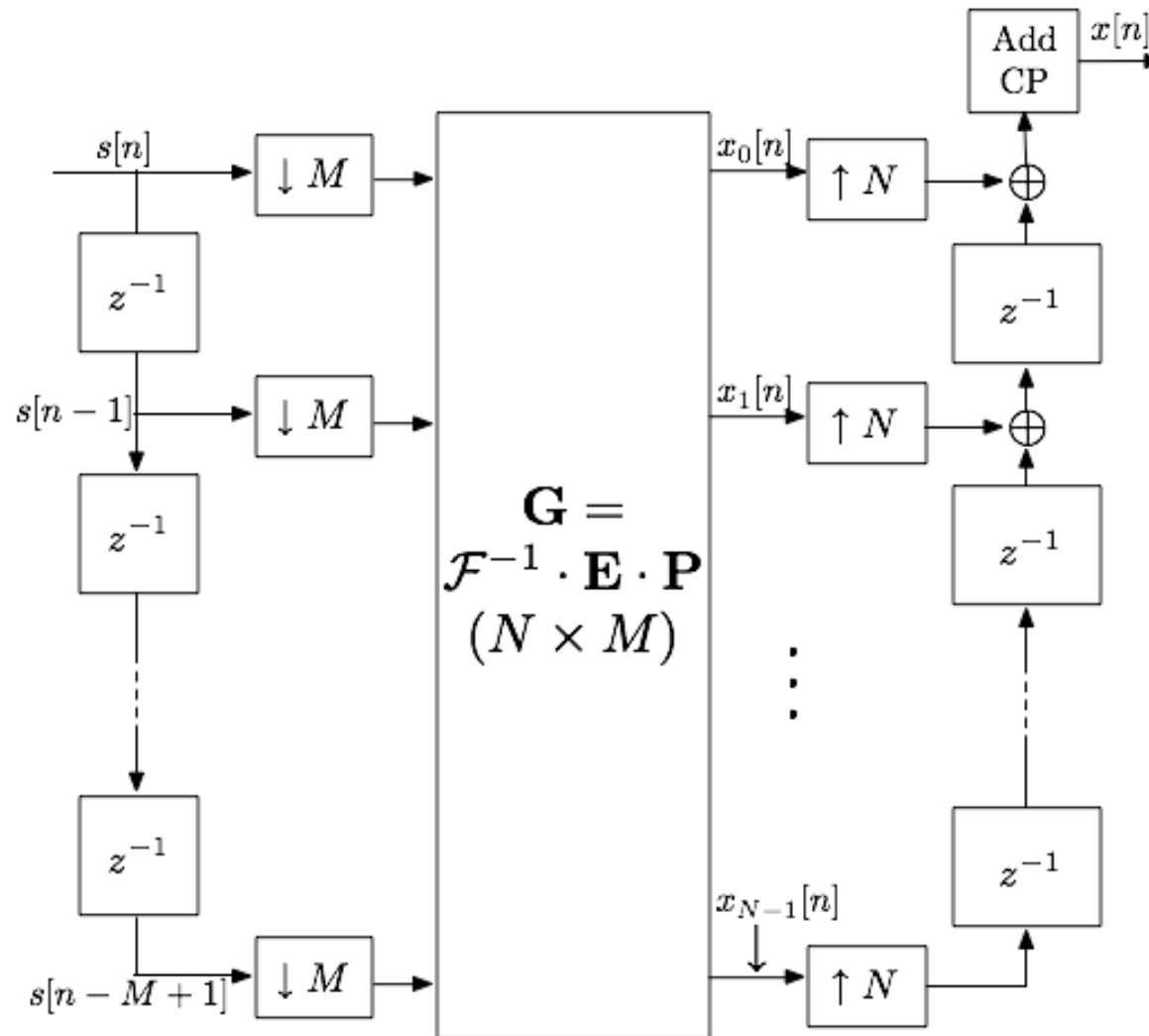
SC-FDMA



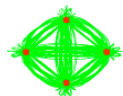
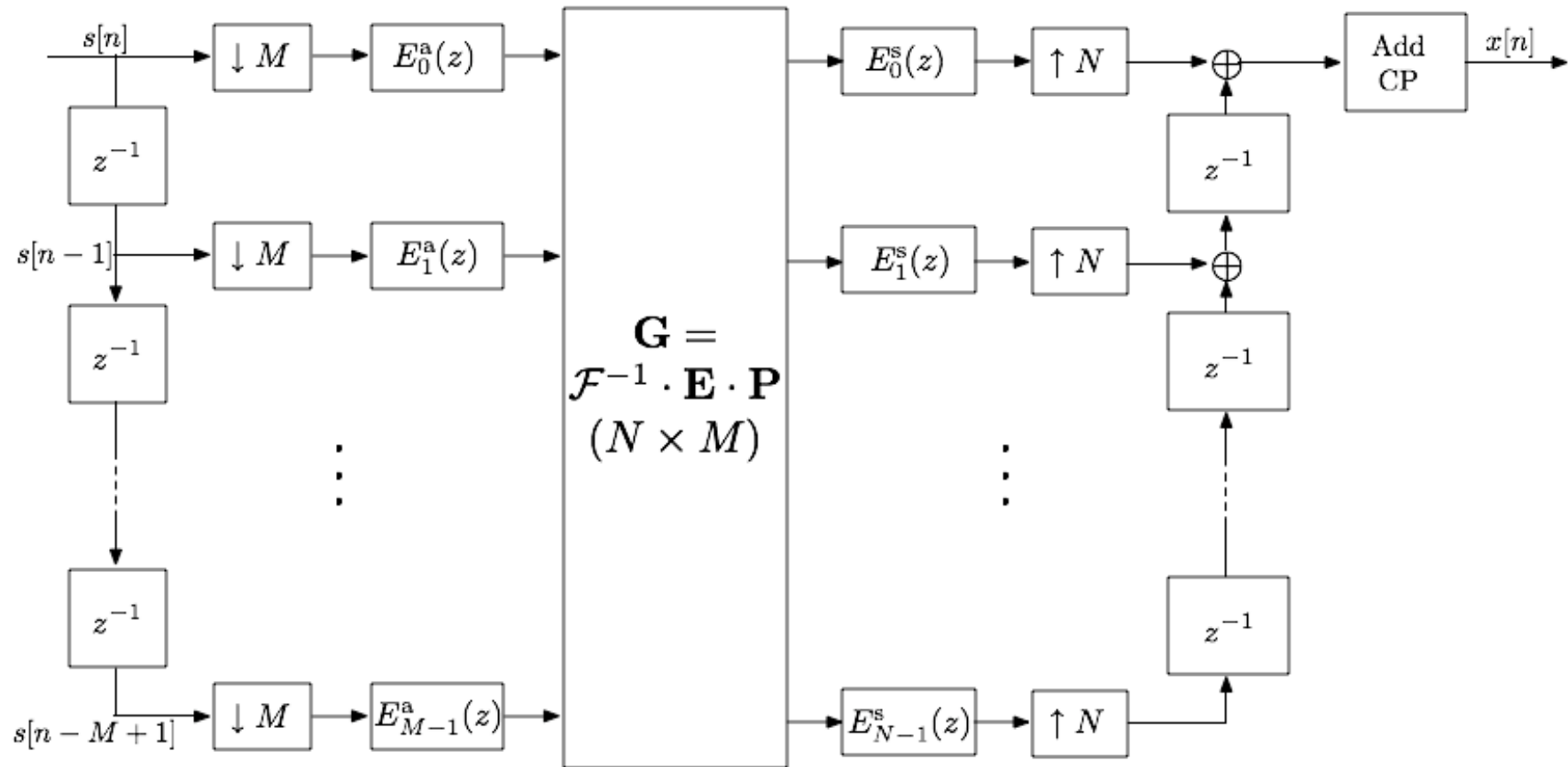
SC-FDMA



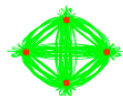
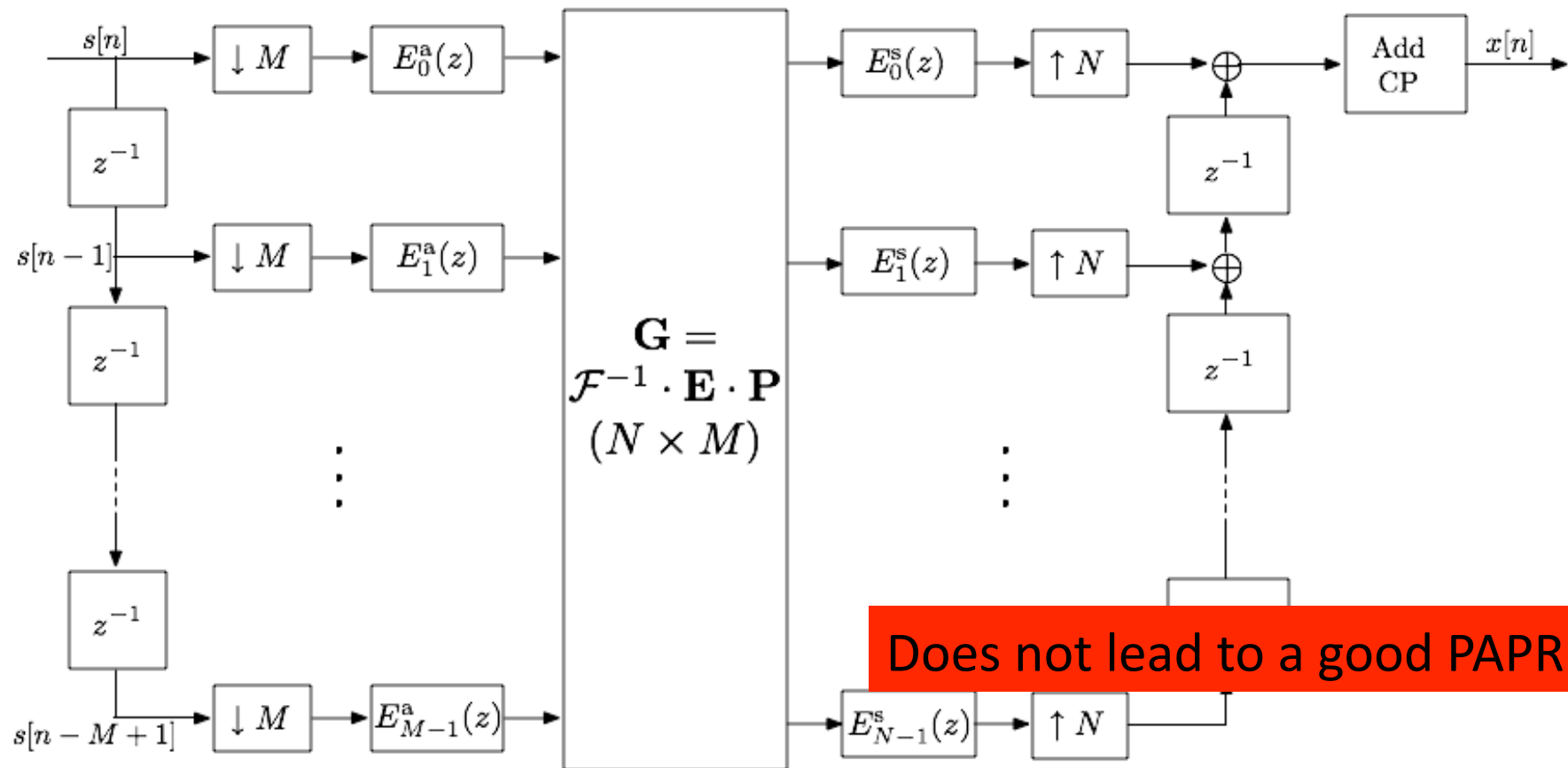
SC-FDMA



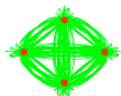
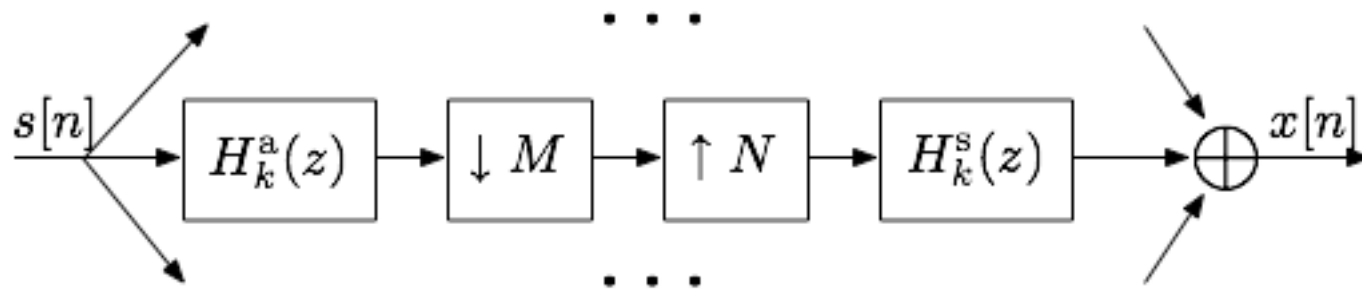
SC-FBMC (Single Carrier FBMC)



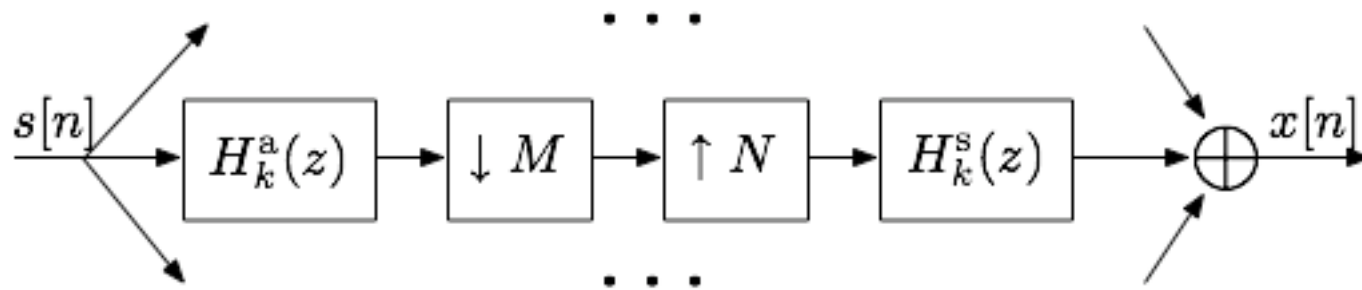
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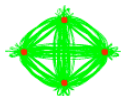
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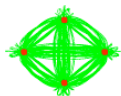
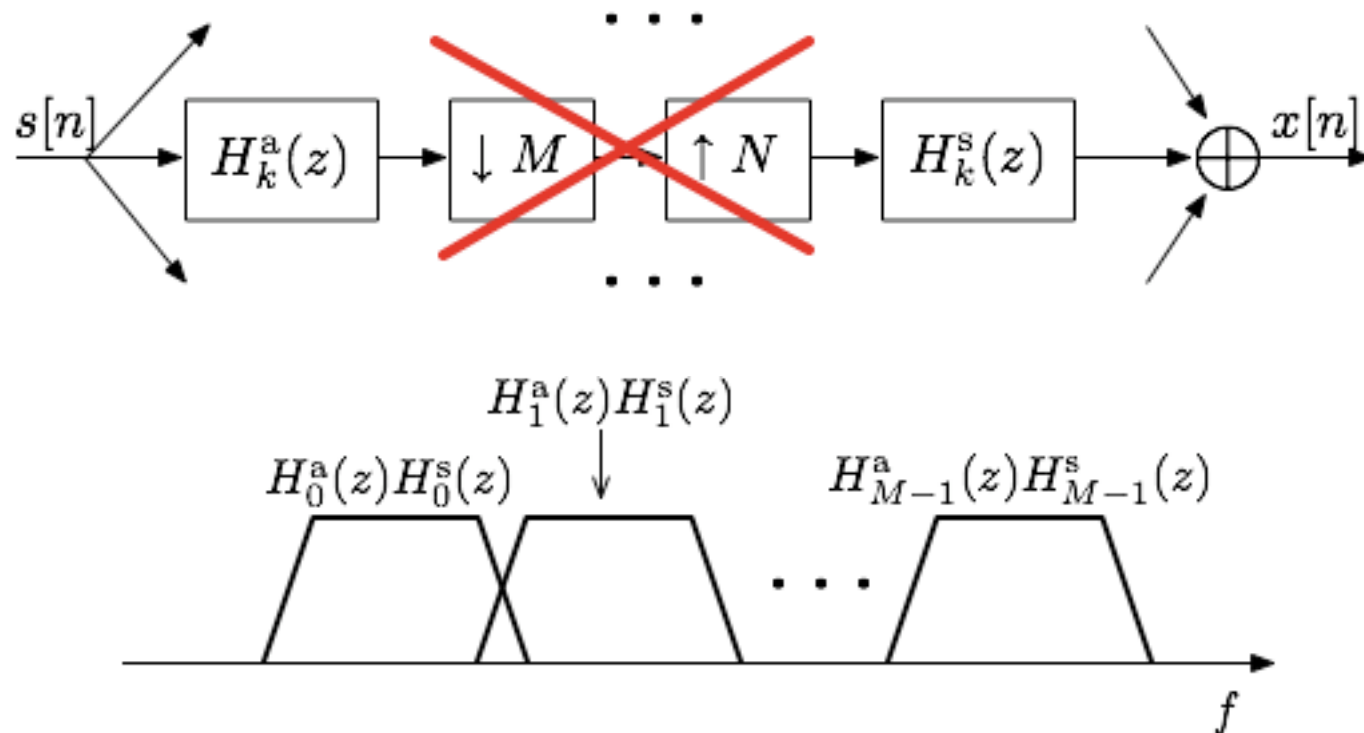
SC-FBMC (Single Carrier FBMC)



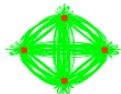
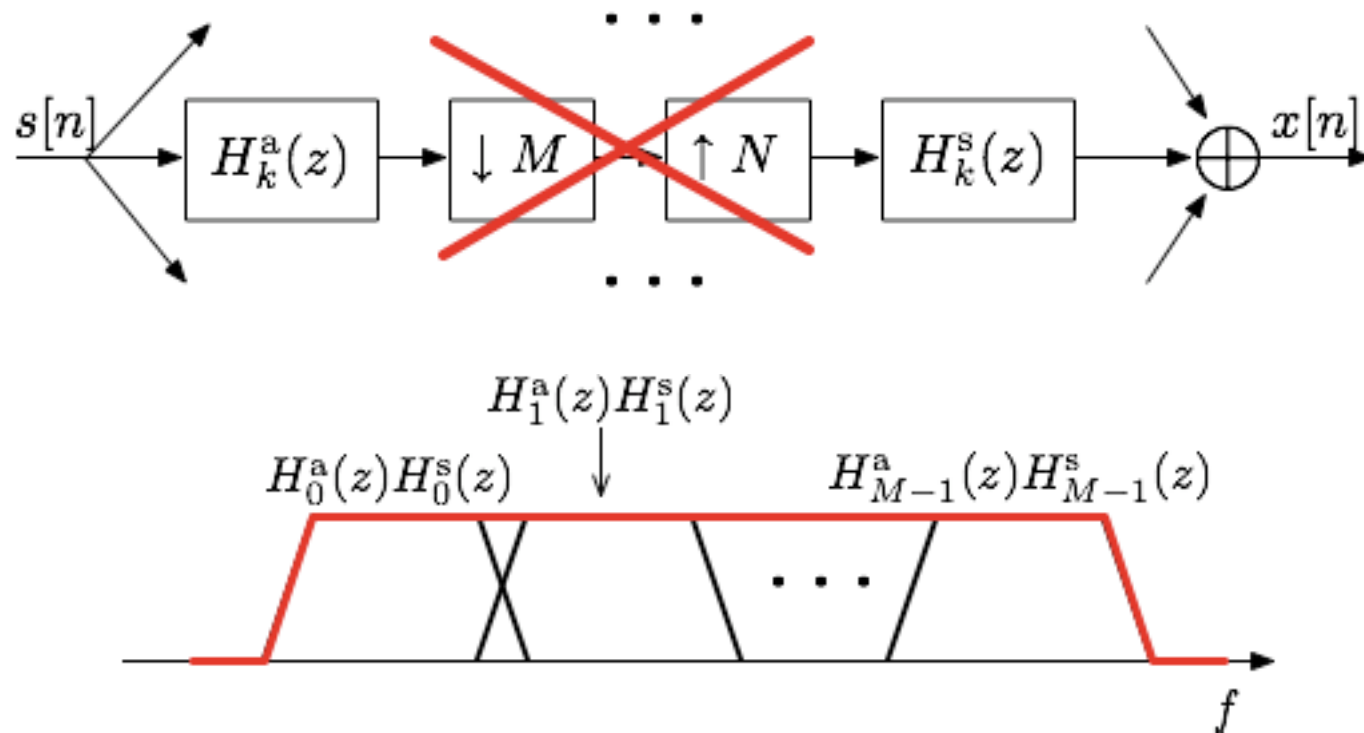
Because of the decimators and expanders aliasing occurs and leads to an ineffective method for PAPR reduction



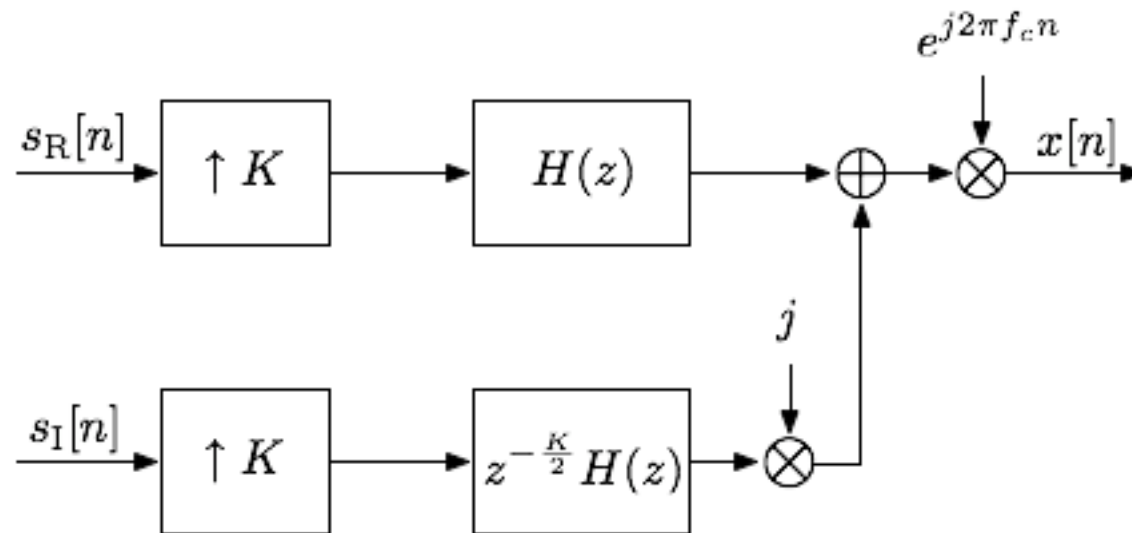
SC-FBMC (Single Carrier FBMC)



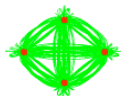
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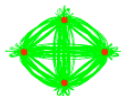
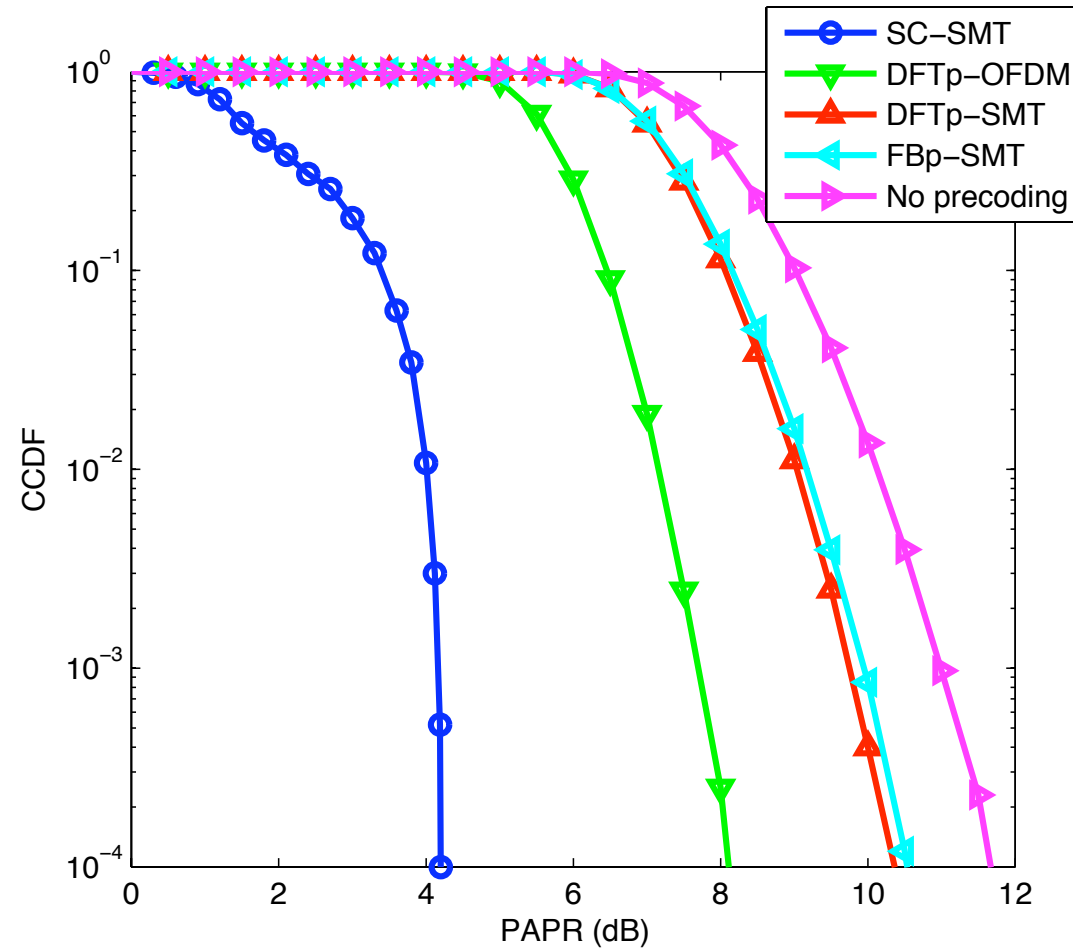


Offset QAM modulator



Numerical Results

Comparisons
FFT size: 512
of used SC: 128

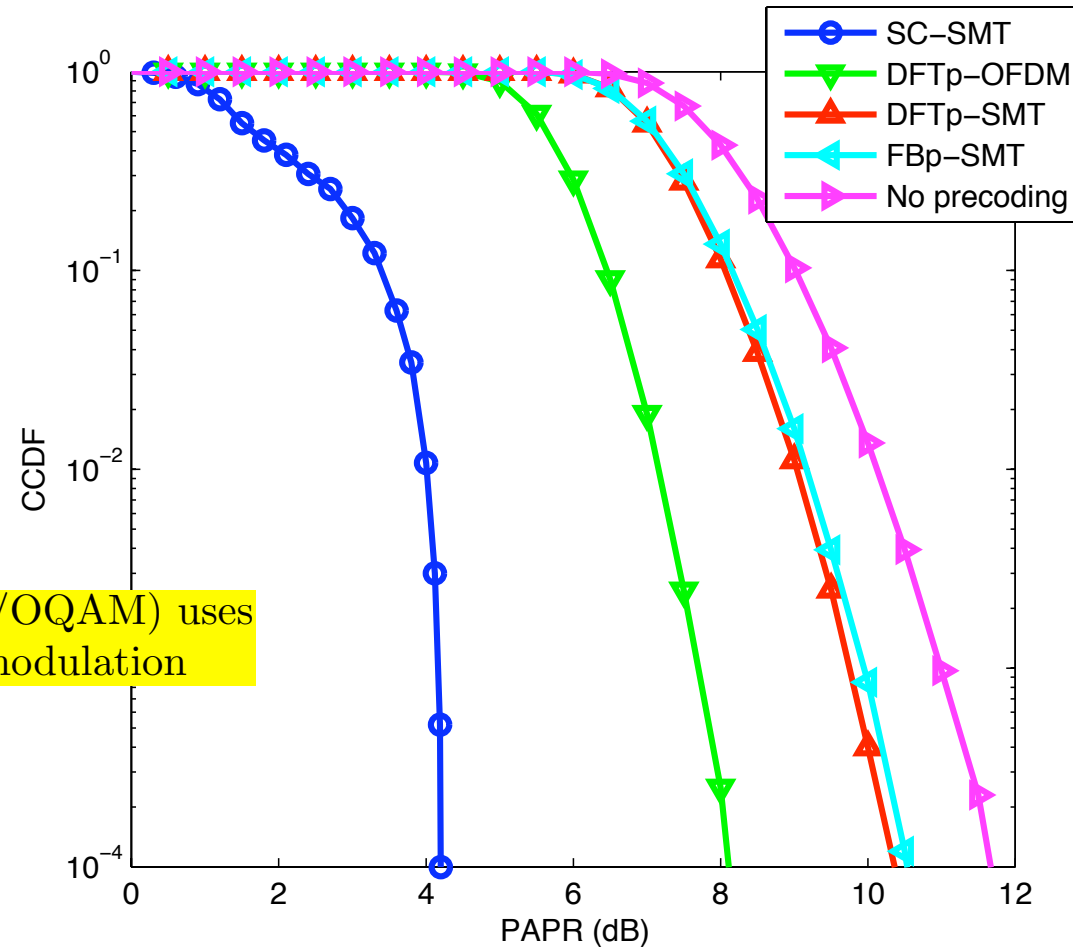


Numerical Results

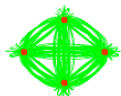
Comparisons

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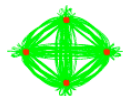
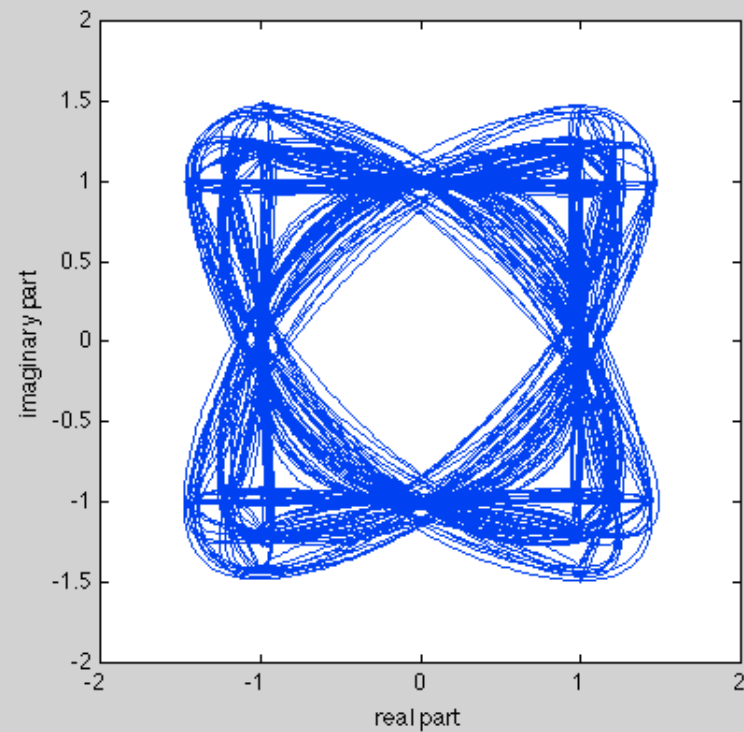
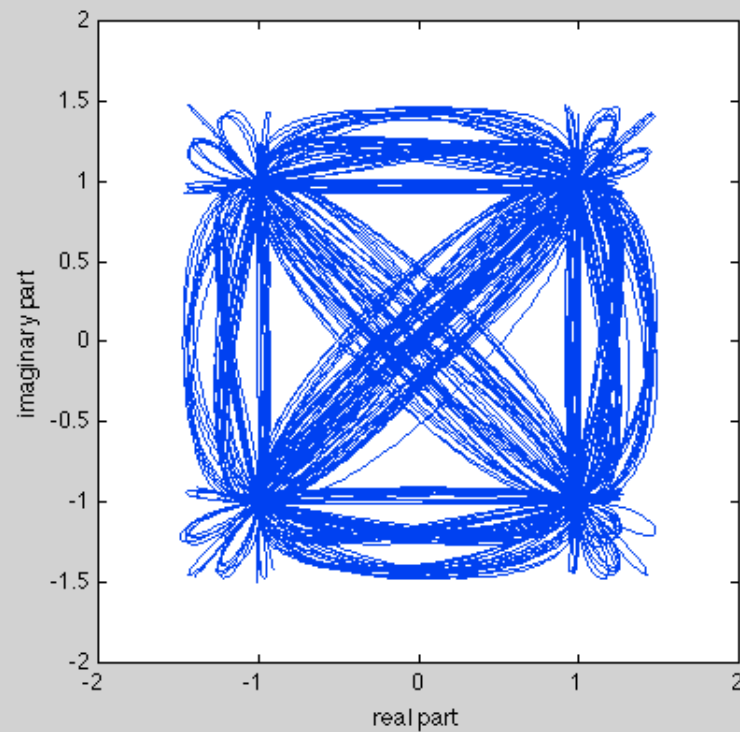
of used SC: 128



SMT (or OFDM/OQAM) uses offset QAM for modulation



Numerical Results



Conclusion

- We noted that SC-FDMA is an analysis-synthesis method for reducing PAPR in OFDMA.
- SC-FBMC was introduced and developed as a dual to SC-FDMA.
- It was found that SC-FBMC, if implemented correctly, can lead up to about 4 dB gain over SC-FDMA.

