

AFF3CT ?

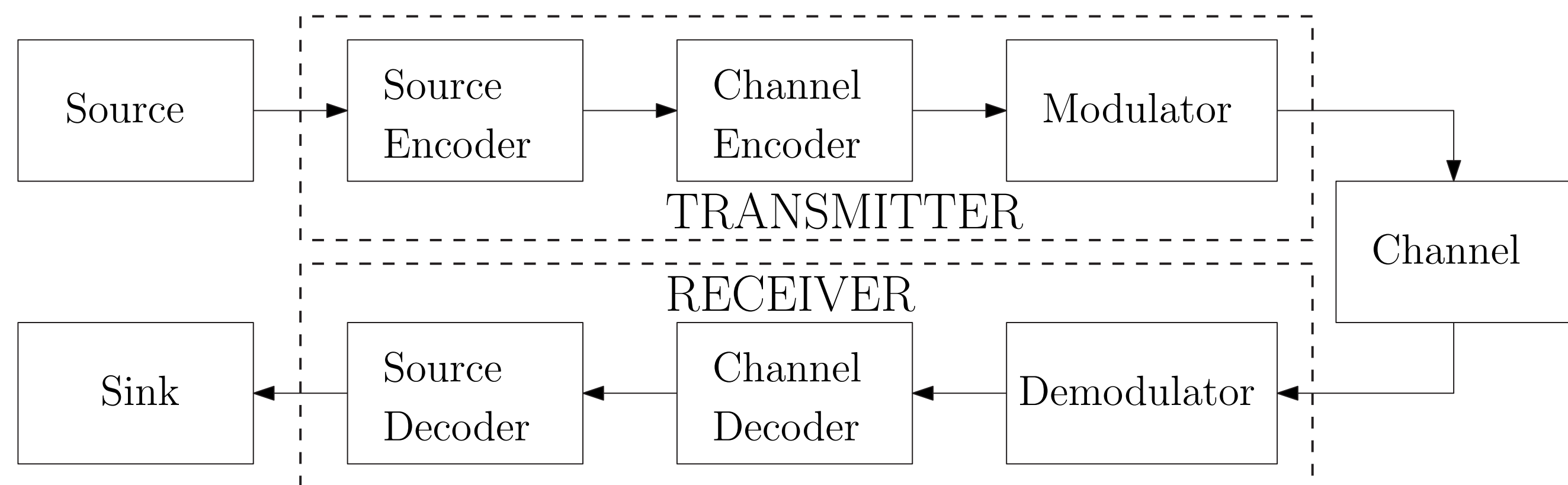


FIGURE 1 – Simplified digital communication chain.

- dedicated to the simulation of digital communication chain,
- reproduces state-of-the-art simulation results,
- can be used as an external library,
- portable : Windows, MacOSX and Linux; x86 and ARM CPUs,
- written in C++ : parallel, optimized source code (SIMD, multi-threaded, multi-nodes),
- open-source (MIT license): <http://aff3ct.github.io>.

FAST SIMULATION OF CHANNEL CODING

Channel code	Standard	Réf.	Decoder	Fixed point	Throughput (Mb/s)
LDPC	5G, WiMAX, WiFi, DVB-S2, 10GE, etc.	[1, 2]	Sum-Product	No	5
			Min-Sum	Yes	50
			Gallager	Yes	10
Polar	5G	[3, 4, 5]	SC	Yes	1000
			SC-List	Yes	500
			SCAN	No	10
Turbo	LTE (3G, 4G), DVB-RCS, CCSDS, etc.	[6, 7]	Turbo BCJR	Yes	100
BCH	CD, DVD, SSD, DVB-S2, etc.	-	Algebraic	No	100
Convul.	NASA	-	BCJR-MAP	No	10
			BCJR-Linear	No	50
			BCJR-Max	Yes	1000

TABLE 1 – Non-exhaustive list of supported channel codes / decoders in AFF3CT. Throughputs are given on an indicative basis for 1 physical x86 CPU core (Intel Core i5-5300U @ 2.30GHz).

PLOTTING RESULTS WITH PYBER

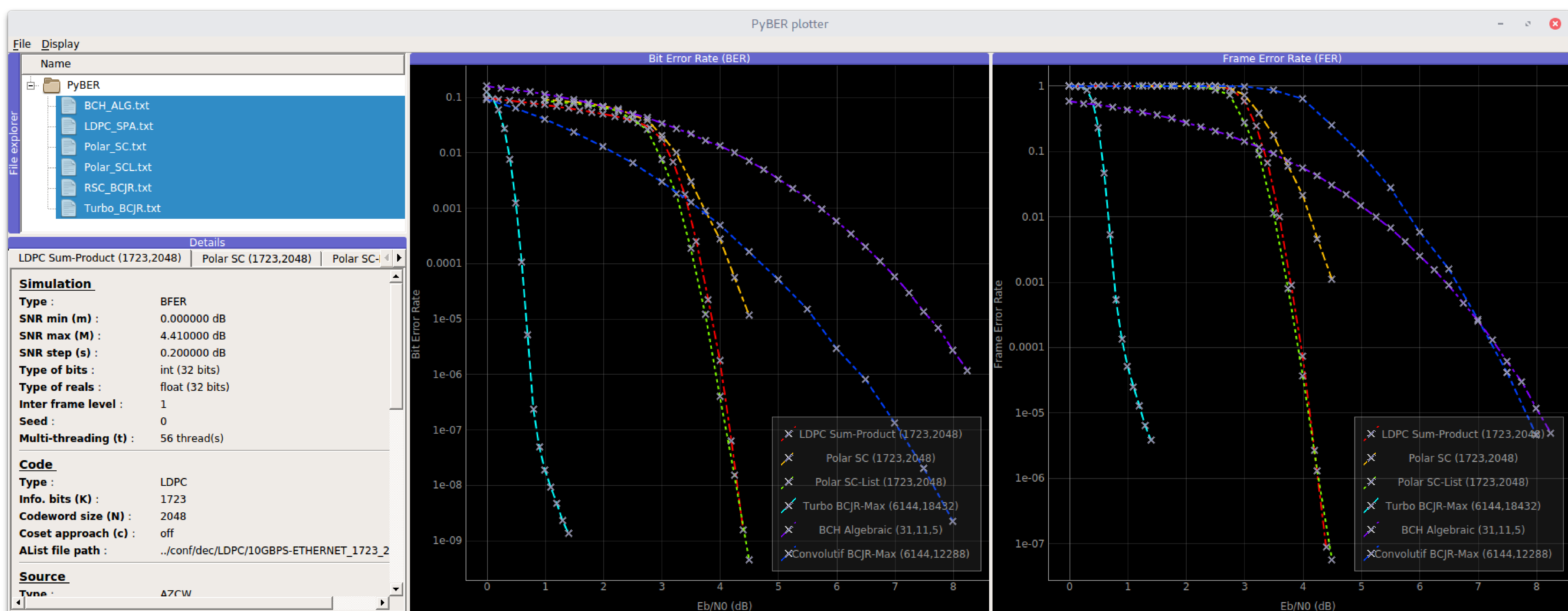


FIGURE 2 – PyBER is an integrated visualization tool to plot BER/FER in AFF3CT.

ALSO IN AFF3CT

- Modulations : CPM, PSK, QAM, PAM, OOK, SCMA[8],
- Channels : AWGN and Rayleigh,
- SystemC/TLM compatible interfaces for hardware in the loop,
- Multi-node support for execution on supercomputers,
- Generation tools for polar codes.

CONCLUSION

AFF3CT is a fast and flexible software tool for the simulation and prototyping of digital communication systems. It is open-source, portable and easily integrates in your environment.

ACKNOWLEDGEMENT

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