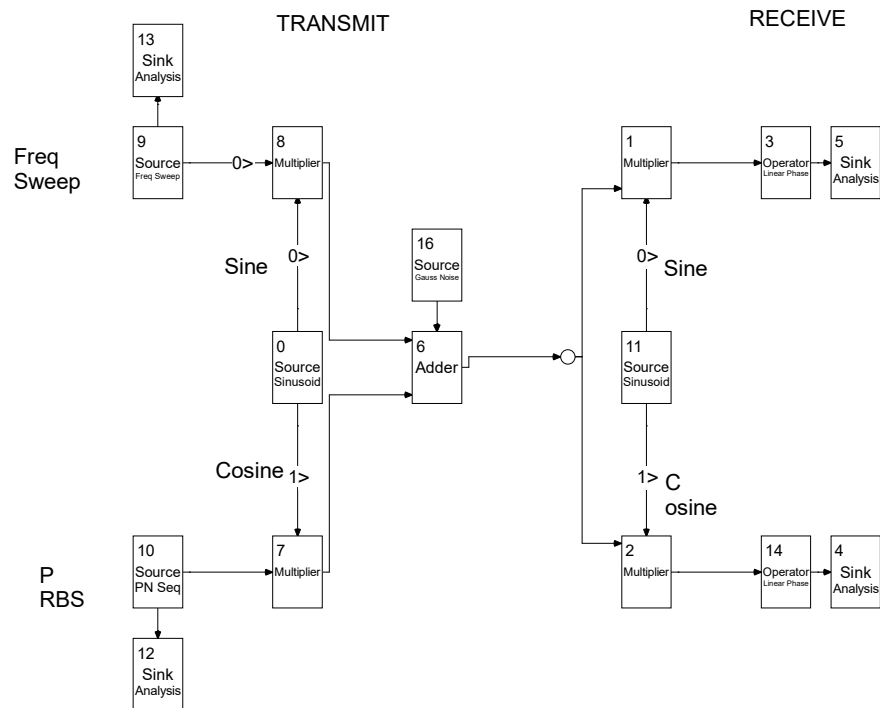


Quadrature Amplitude Modulation (Quadrature Multiplexing)

Amplitude modulation of a signal with bandwidth $B=5\text{kHz}$, with a carrier at frequency, F_c , produces a bandlimited signal from frequency F_c-B to F_c+B , i.e. a bandwidth of $2B$. Hence bandwidth of $2B$ is required to transmit a signal of bandwidth B . With QUADRATURE AMPLITUDE MODULATION, we use orthogonal carriers to modulate TWO signals of bandwidth B onto the same carrier.



Run the system and note that the two inputs can be recovered at the receiver.

Put a small phase error (of 4 degrees in the local oscillator at the receiver. What is the effect on the output?

If you observe carefully you should notice that some of the PRBS is added to the chirp, and some of the chirp is added to the PRBS.