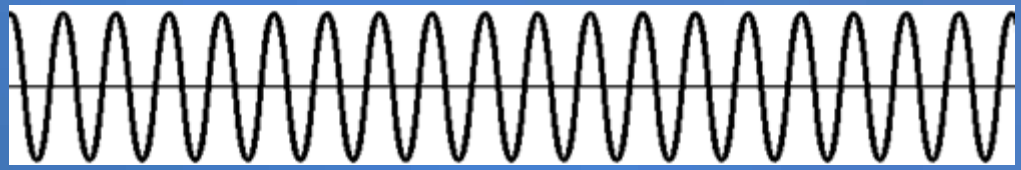
From BPSK to QPSK

Carrier Signal $c(t) = A\cos(2\pi ft - \theta)$



QPSK:

11: $c(t) = A\cos(2\pi ft - \pi/4)$

01: $c(t) = A\cos(2\pi ft - 3\pi/4)$

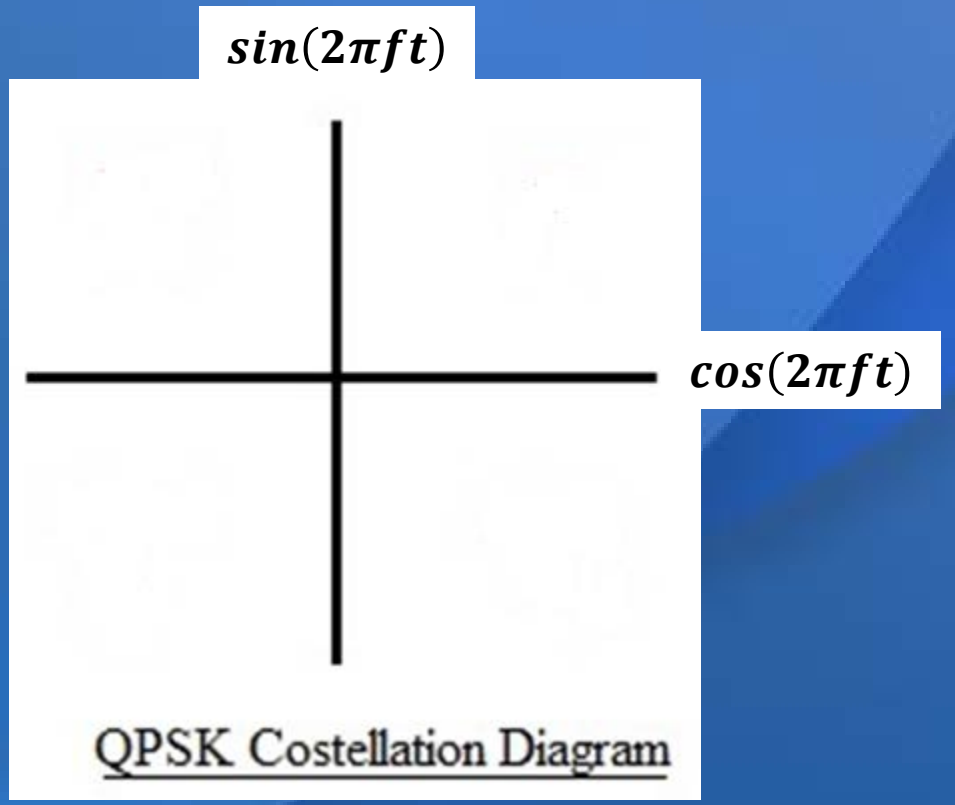
00: $c(t) = A\cos(2\pi ft - 5\pi/4)$

10: $c(t) = A\cos(2\pi ft - 7\pi/4)$

$$c(t) = A\cos(2\pi ft - \theta)$$
$$= A[\cos(2\pi ft)\cos(\theta) + \sin(2\pi ft)\sin(\theta)]$$
$$= [A\cos(\theta)]\cos(2\pi ft) + [A\sin(\theta)]\sin(2\pi ft)$$

I Channel

Q Channel

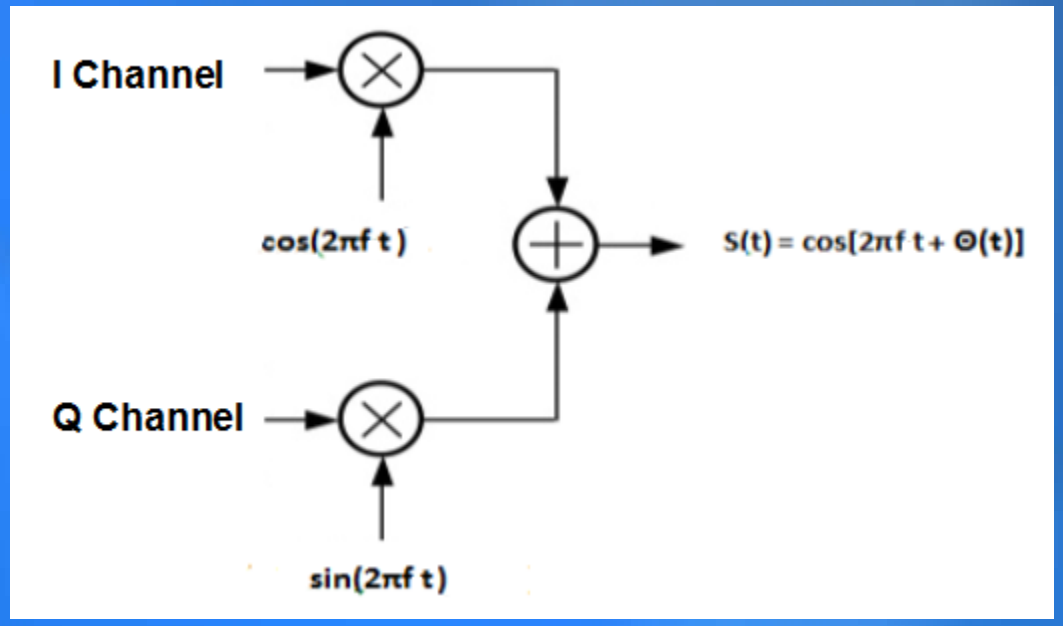


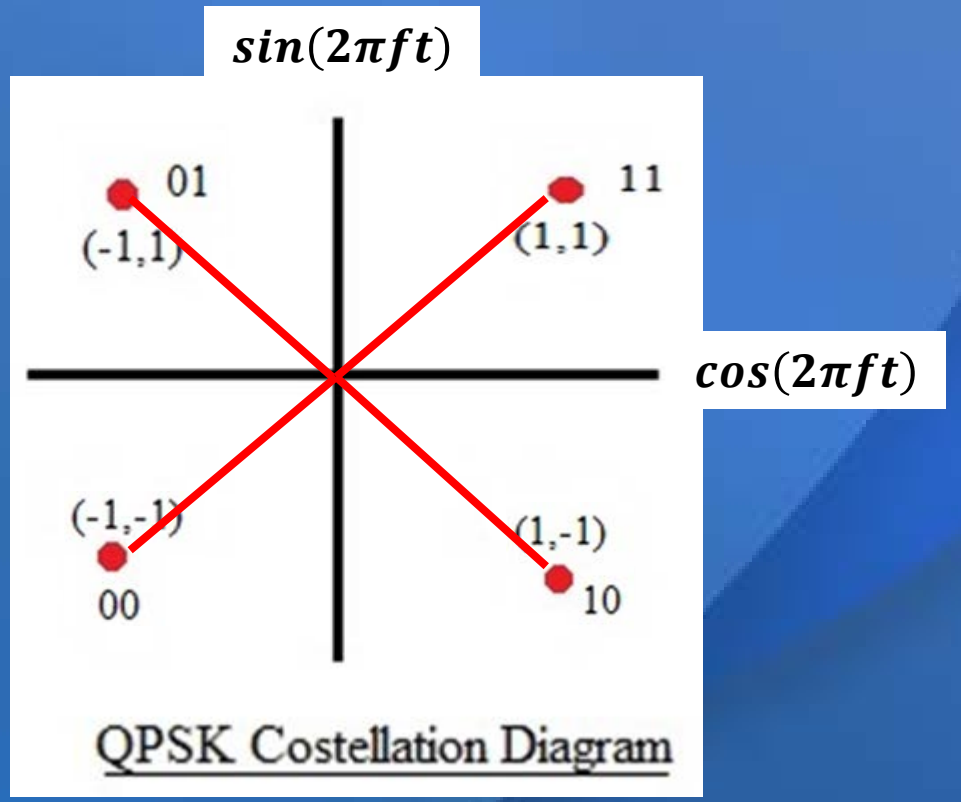
QPSK Implementation: I/Q Channel

I Channel Q Channel

$$c(t) = [A\cos(\theta)]cos(2\pi ft) + [Asin(\theta)]sin(2\pi ft)$$

	$A\cos(\theta)$	$Asin(\theta)$	Bits
θ=π/4	1	1	11
θ=3π/4	-1	1	01
θ=5π/4	-1	-1	00
θ=7π/4	1	-1	10





MATLAB Program