



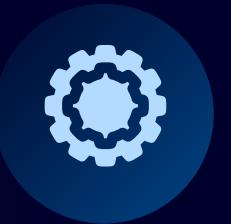
Quadrature Amplitude Modulation (QAM)

PRESENTED BY

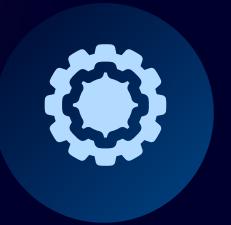
Arpan Adhikari

QAM

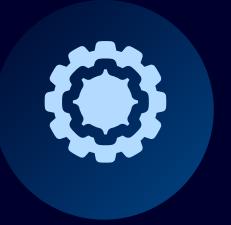
Contents for discussion



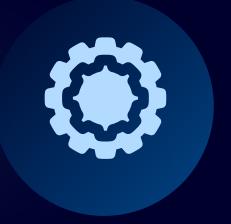
QAM Introduction



QAM Transmitter



QAM Receiver

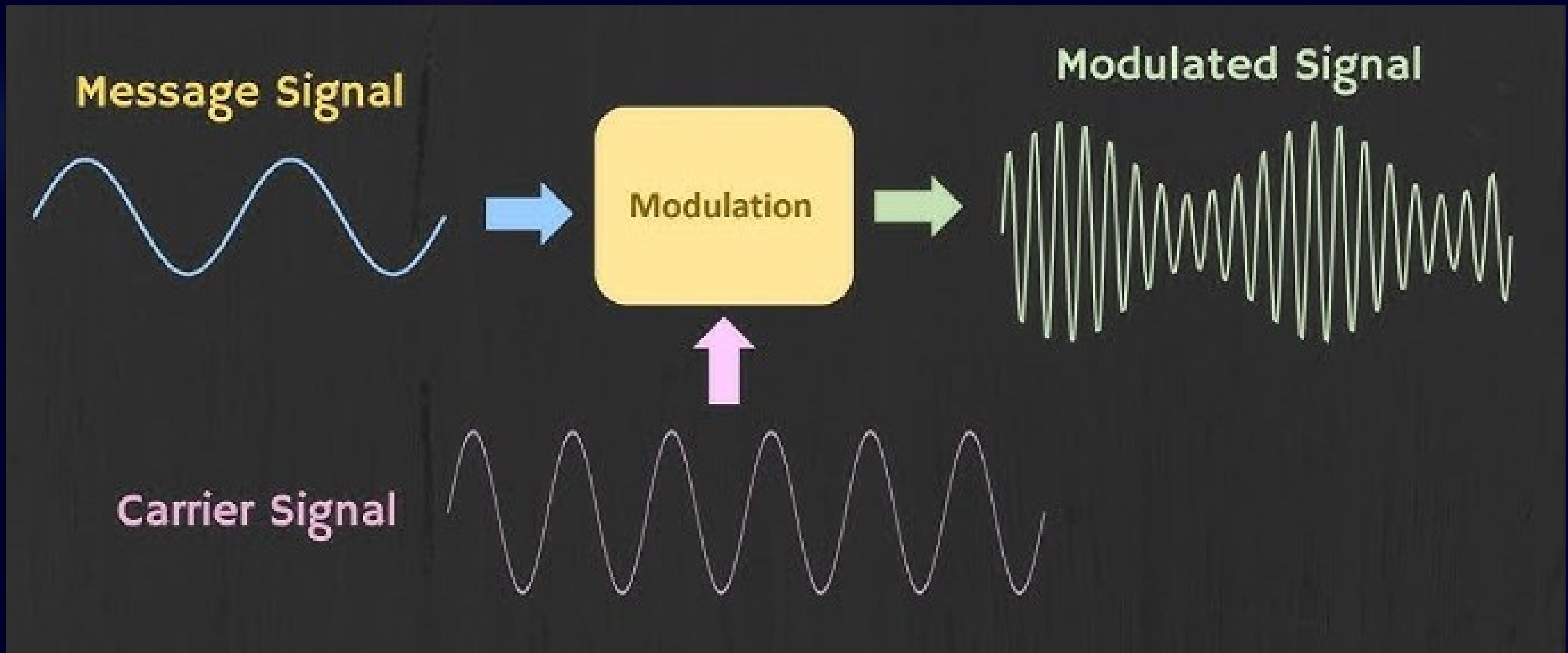


Advantages of QAM



Applications of QAM

Modulation



Types of Multilevel Modulation



**Quadrature Phase Shift
Keying (QPSK)**

**Quadrature Amplitude
Modulation (QAM)**

Quadrature Amplitude Modulation (QAM)

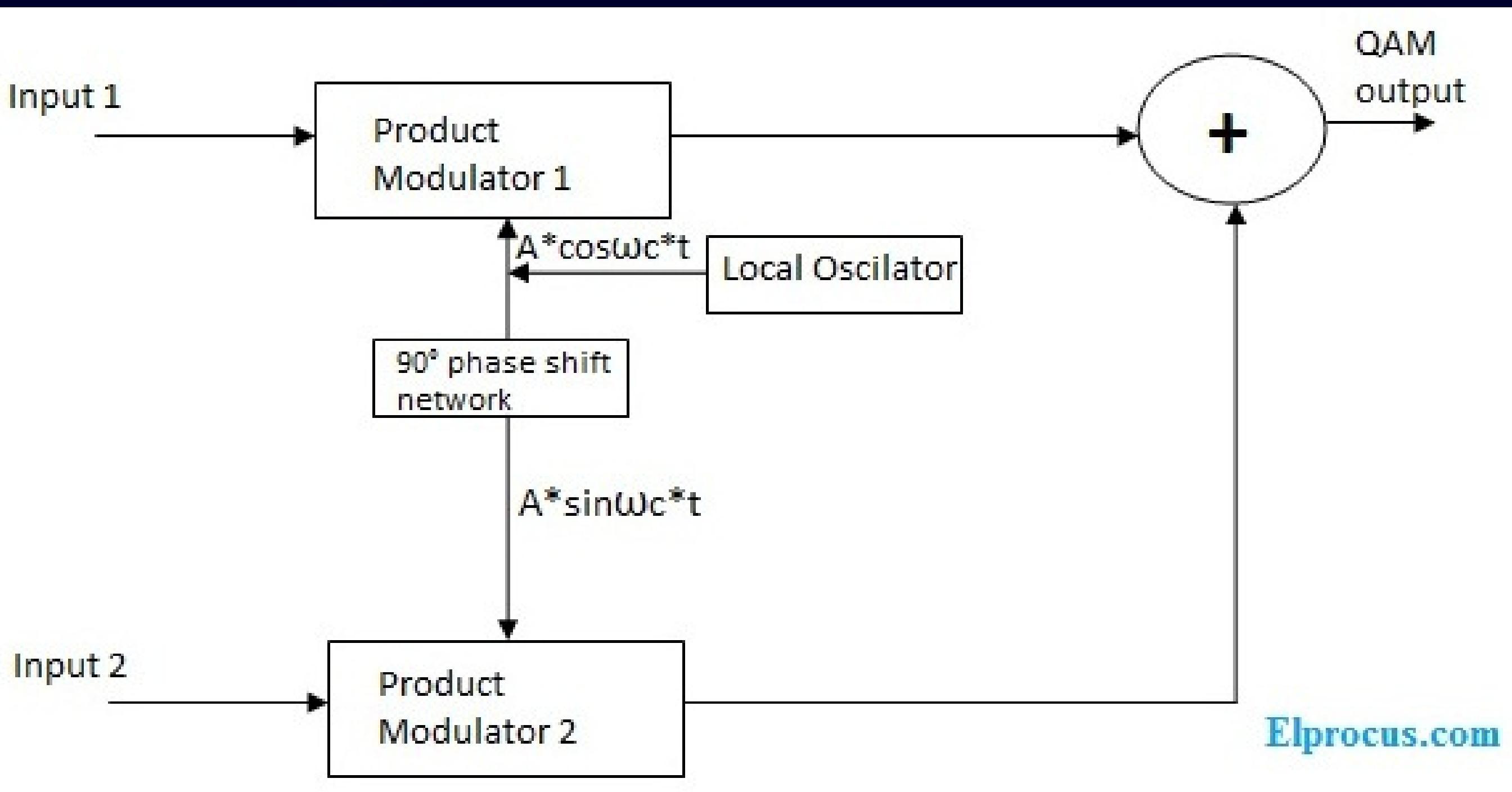


Fundamentals of QAM: Amplitude and Phase Modulation

1 Amplitude Modulation

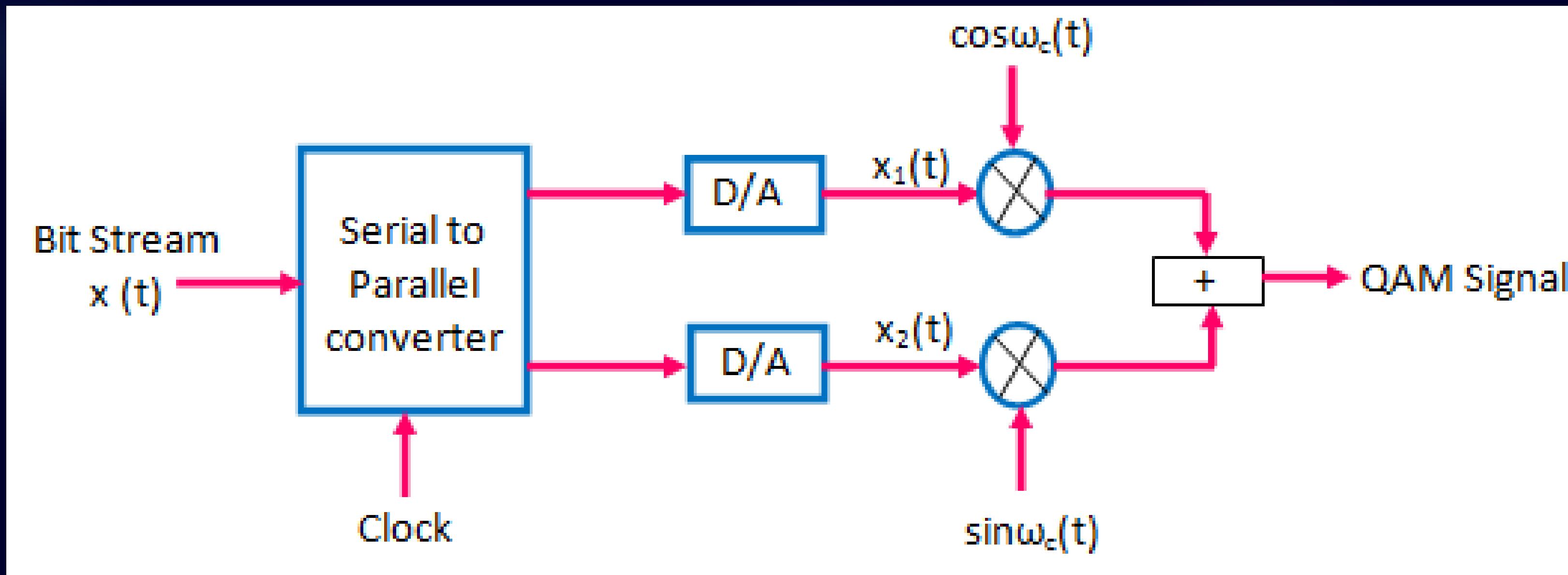
2 Phase Modulation

QAM Transmitter

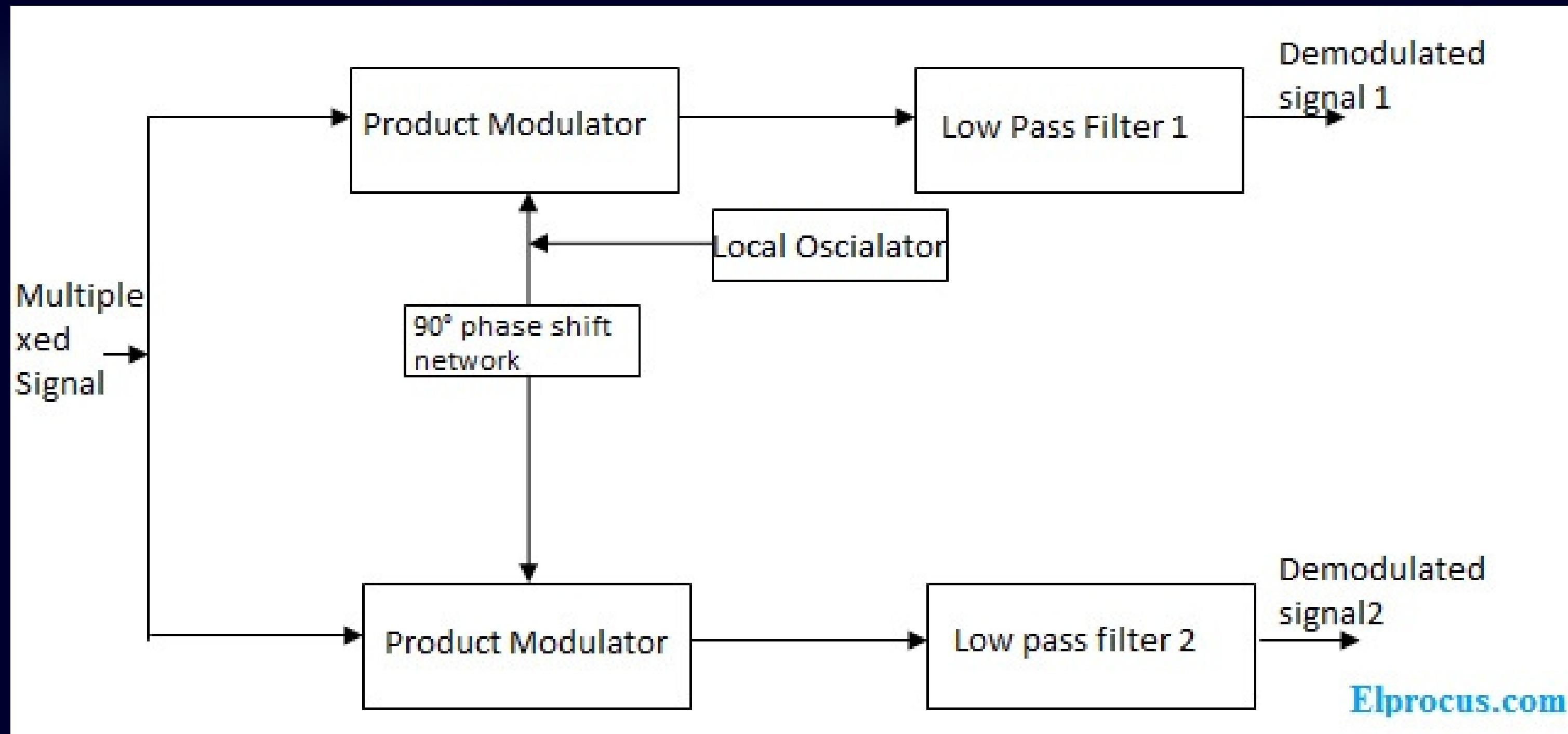


Digital Signal

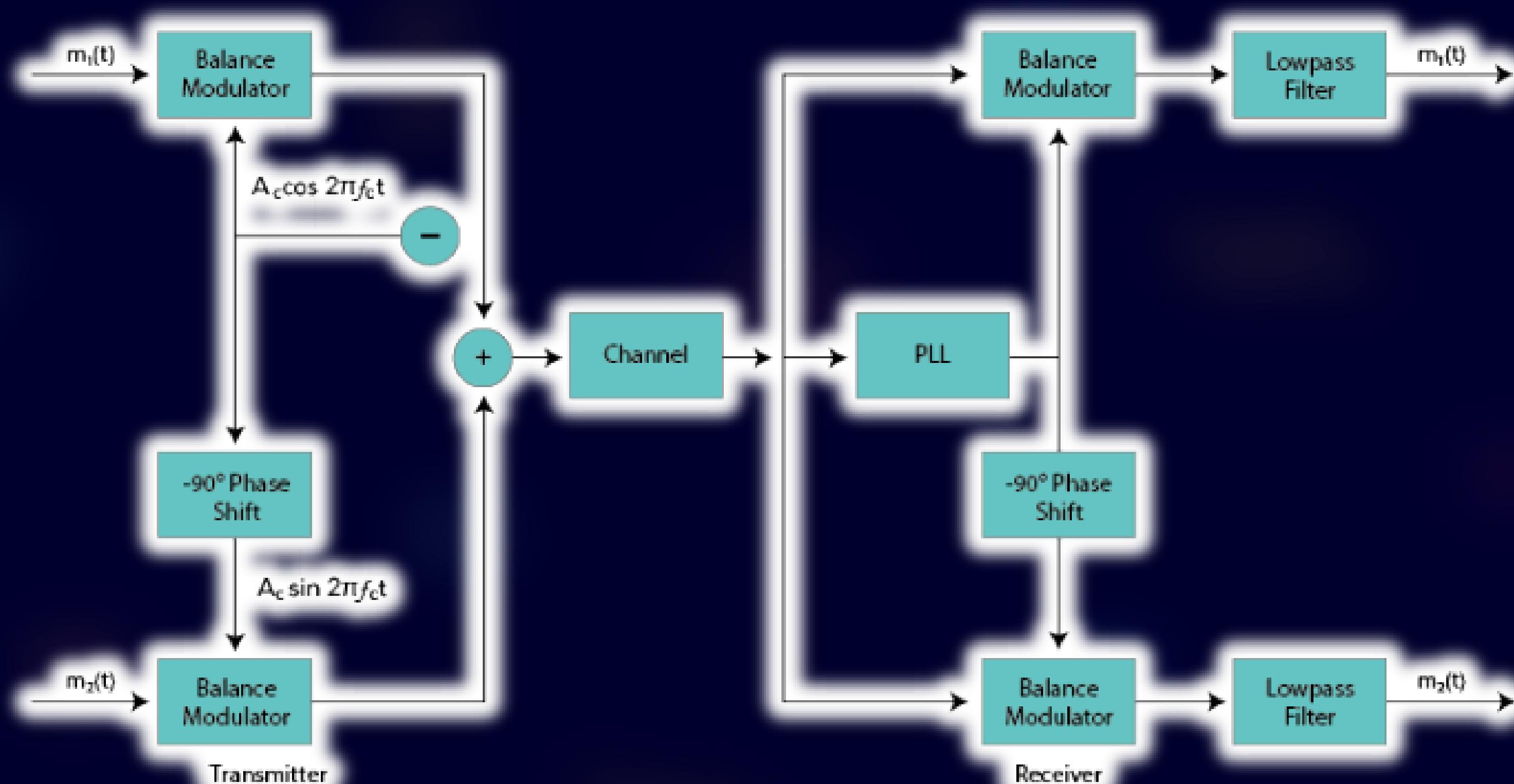
QAM Transmitter



QAM Receiver

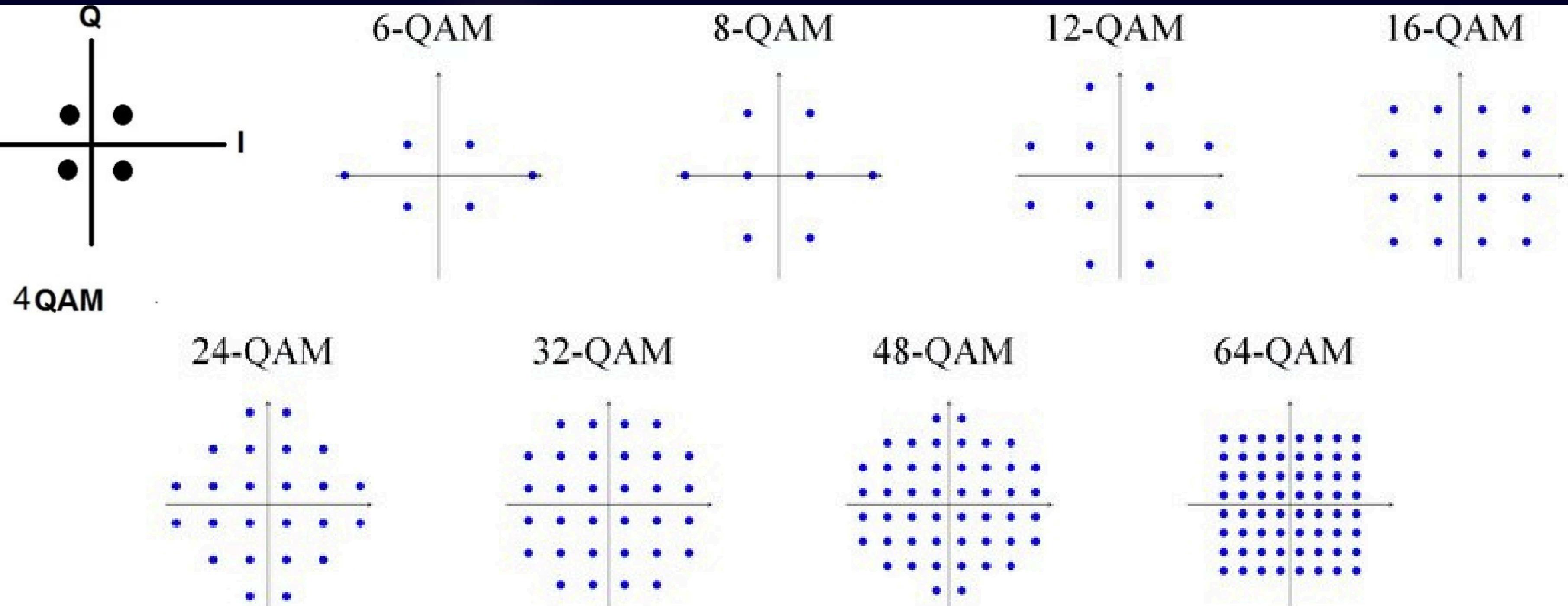


QAM Transmitter and Receiver



PLL = Phase Locked Loop

Types of QAM



Advantages of QAM over Other Modulation Techniques

Higher Data Rate

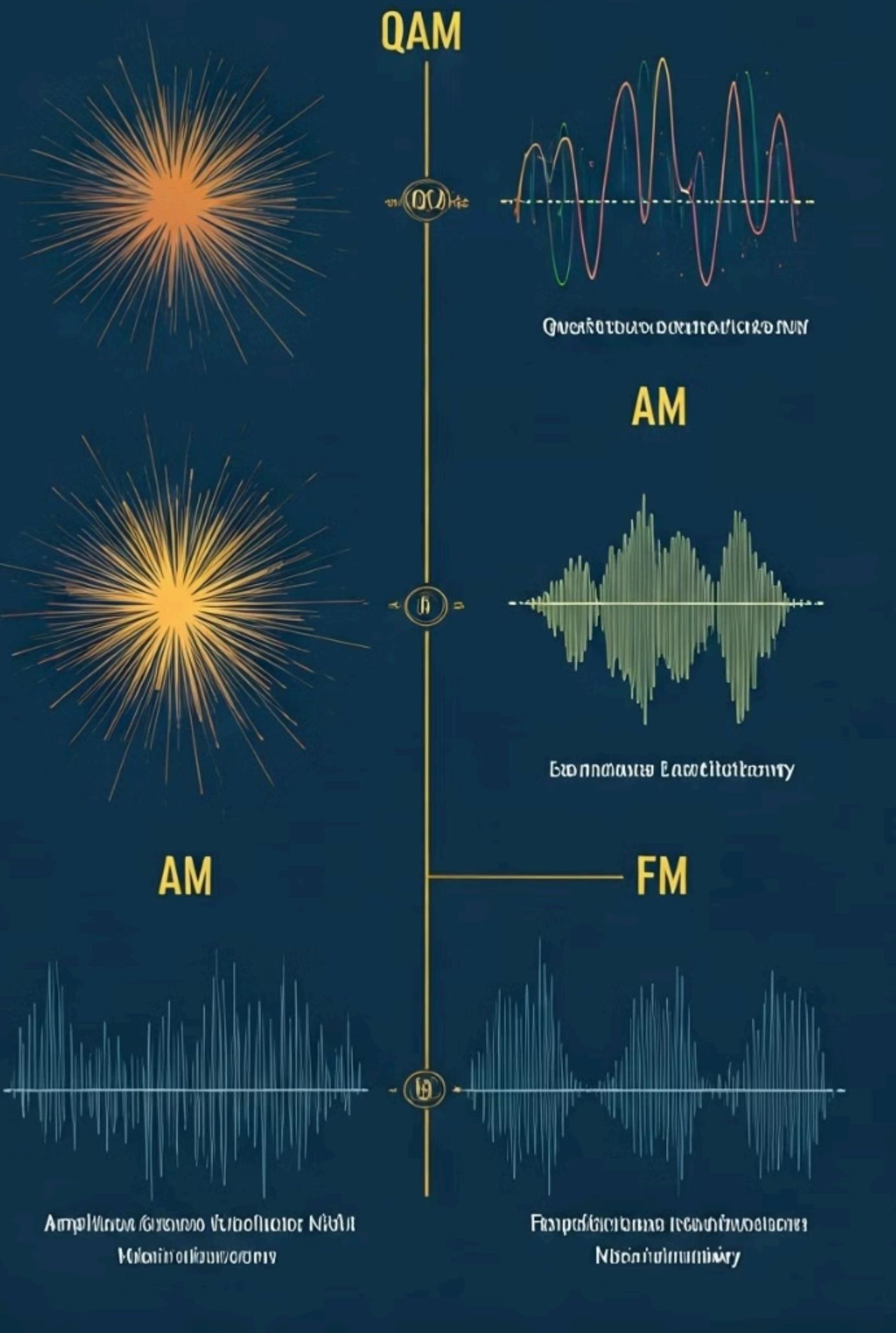
Transmits more data per unit of time

Improved Bandwidth Efficiency

Utilizes available bandwidth more effectively

Robust Performance

Resistant to noise and interference



QAM in Digital Communications: Cellular Networks and Wi-Fi



Cellular Networks

4G LTE and 5G utilize QAM for high-speed data



Wi-Fi

802.11 standards employ QAM for wireless connectivity



QAM Applications: Cable TV, Satellite Communications, and Beyond

100M

Cable TV

Digital cable systems use QAM for efficient signal transmission

1G

Satellite Communications

QAM enables high-bandwidth data transmission to remote locations

2G

Digital Broadcasting

QAM facilitates the transmission of high-definition television signals





THANK
YOU