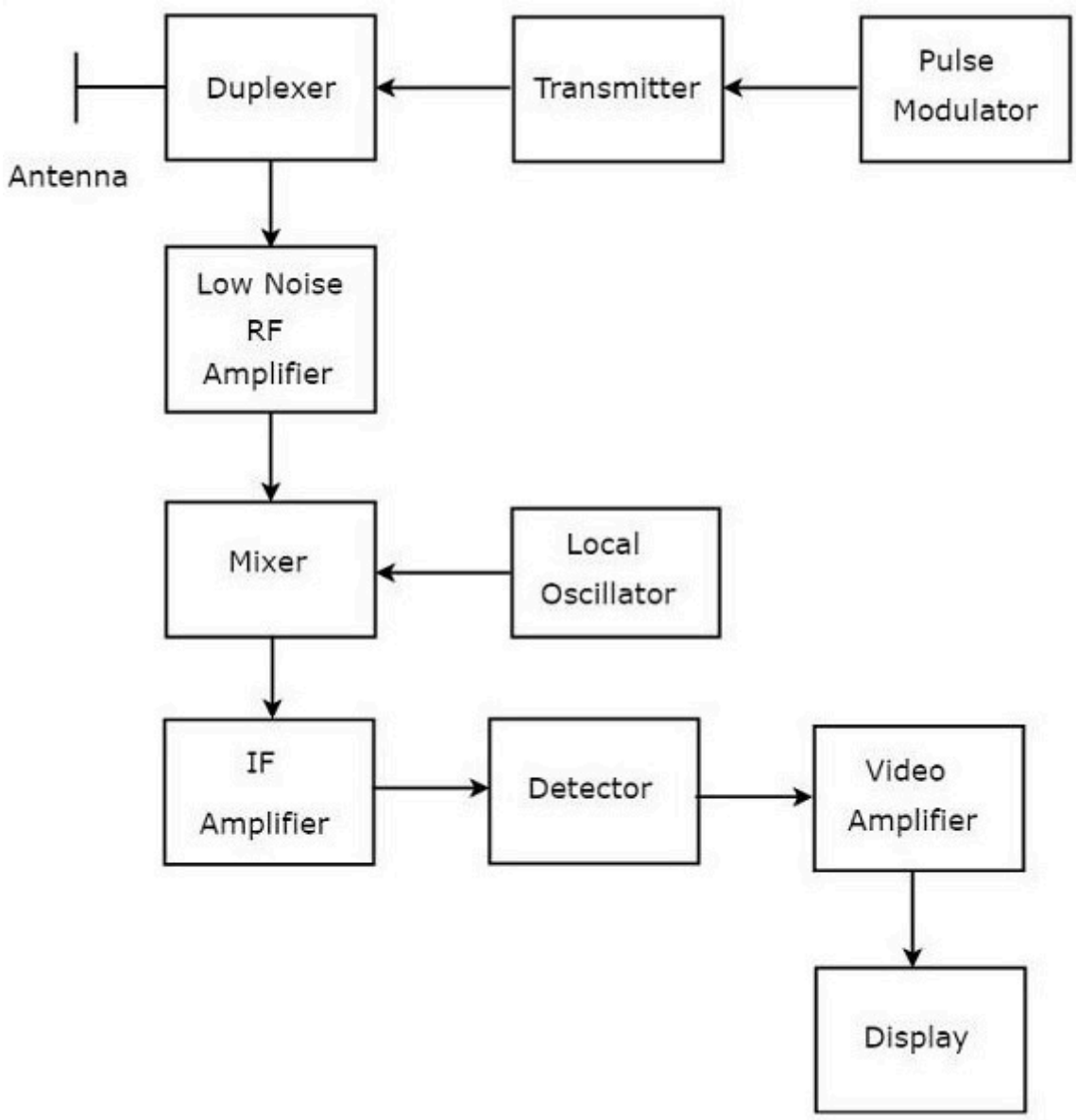
Radar Systems - Pulse Radar

The Radar, which operates with pulse signal for detecting stationary targets is called Basic Pulse Radar or simply, **Pulse Radar**. In this chapter, let us discuss the working of Pulse Radar.

Block Diagram of Pulse Radar

Pulse Radar uses single Antenna for both transmitting and receiving of signals with the help of Duplexer. Following is the **block diagram** of Pulse Radar –



Let us now see the **function** of each block of Pulse Radar –

- **Pulse Modulator** − It produces a pulse-modulated signal and it is applied to the Transmitter.
- **Transmitter** − It transmits the pulse-modulated signal, which is a train of repetitive pulses.
- **Duplexer** − It is a microwave switch, which connects the Antenna to both transmitter section and receiver section alternately. Antenna transmits the pulse-modulated signal, when the duplexer connects the Antenna to the transmitter. Similarly, the signal, which is received by Antenna will be given to Low Noise RF Amplifier, when the duplexer connects the Antenna to Low Noise RF Amplifier.
- **Low Noise RF Amplifier** − It amplifies the weak RF signal, which is received by Antenna. The output of this amplifier is connected to Mixer.
- **Local Oscillator** − It produces a signal having stable frequency. The output of Local Oscillator is connected to Mixer.
- **Mixer** − We know that Mixer can produce both sum and difference of the frequencies that are applied to it. Among which, the difference of the frequencies will be of Intermediate Frequency (IF) type.
- **IF Amplifier** − IF amplifier amplifies the Intermediate Frequency (IF) signal. The IF amplifier shown in the figure allows only the Intermediate Frequency, which is obtained from Mixer and amplifies it. It improves the Signal to Noise Ratio at output.
- **Detector** − It demodulates the signal, which is obtained at the output of the IF Amplifier.
- **Video Amplifier** − As the name suggests, it amplifies the video signal, which is obtained at the output of detector.
- **Display** − In general, it displays the amplified video signal on CRT screen.

In this chapter, we discussed how the Pulse Radar works and how it is useful for detecting stationary targets. In our subsequent chapters, we will discuss the Radars, which are useful for detecting non-stationary targets.