Sequential Lobing

The process of switching the antenna beams alternatively between two patterns, for measuring the direction and magnitude of the angular error in one coordinate is called sequential lobing or lobe switching or sequential switching. The polar representation of switching antenna patterns is as shown in figure (1). The rectangular representation of switched antenna patterns is as shown in figure (2) and obtained error signal is as shown in figure (3).

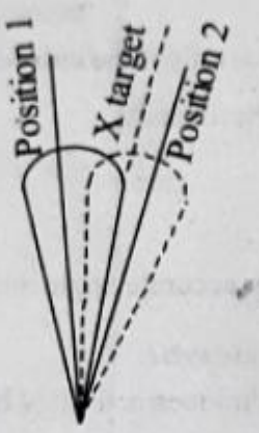

Figure (1)

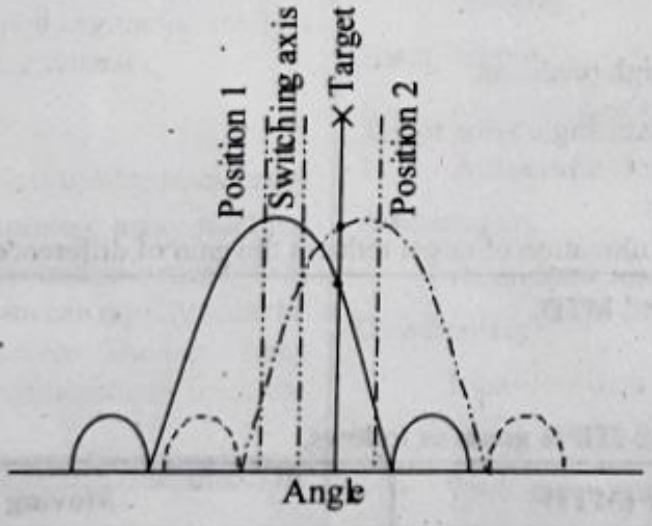

Figure (2)

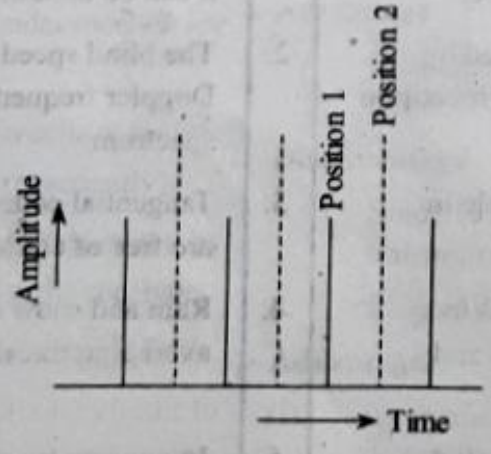

Figure (3)

In sequential lobing, the angular displacement of the target from the switching axis is the difference in amplitude between the voltages at two switching positions. The sign of the above difference determines the direction in which the antenna must be moved in order to align the switching axis with the direction of the target. Using the axis direction we can determine the position of the target can be determined, when the voltages on two switching positions are equal.

For tracking in multidimension, the number of lobes used in the antenna pattern must be increased.

Limitation

The accuracy of the system is limited by the noise caused by mechanical or electrical fluctuations.

Advantage of Sequential Lobing

The angle accuracy or accuracy of target position is much better than the antenna beam width.

Applications

1. It is used in airborne interception radars.
2. It is also employed in ground based anti-aircraft fire control radars.