**Haversine**

Haversine is a waveform that is sinusoidal in nature, but consists of a portion of a sine wave superimposed on another waveform. The input current waveform to a typical off-line power supply has the form of a haversine.

The haversine formula is used in electronics and other applications such as navigation. For example, it helps in finding out the distance between two points on a sphere.

The **haversine** formula determines the great-circle distance between two points on a sphere given their longitudes and latitudes.

**Haversine algorithm to calculate the distance from target point to origin point**

1. R is the radius of earth in meters.

LatO = latitude of origin point, LongO = longitude of origin point

LatT= latitude of target point, LongT= longitude of target point

1. Difference in latitude = LatO-LatT

Difference in longitude = LongO -LongT

1. Ф =Difference in latitude in radians

Λ =Difference in longitude in radians

O= LatO in radians.

T= LatT in radians.

1. A= sin(Ф/2) \* sin(Ф/2) + cos(O) \*cos(T)\*sin(Λ/2)\*sin(Λ/2)
2. B= min(1,sqrt(A))

Distance = 2\*R\*B