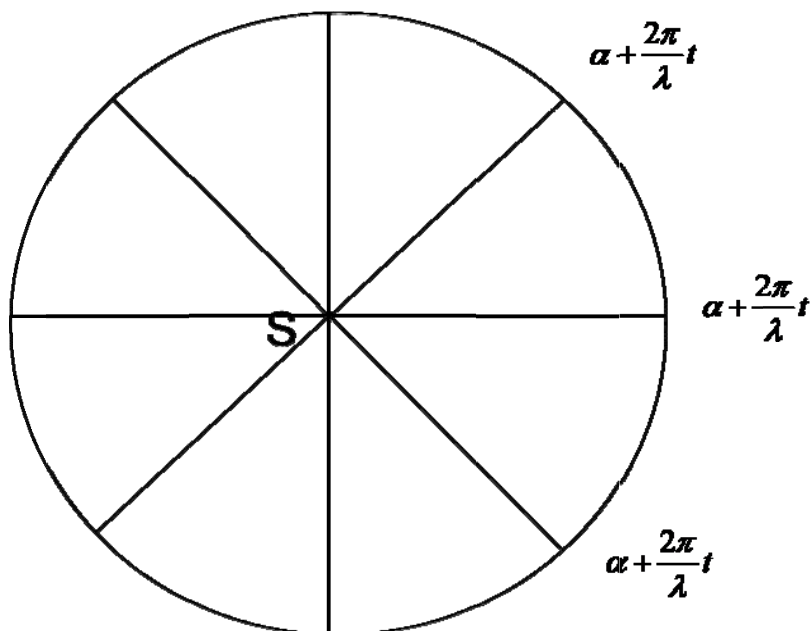




## Wave Front

**Wave front:** Wave front at an instant t.



Let S be a point source of light. To find the points where the light from source S will reach after a time t with S as center and  $c \times t$  as radius we imagine a sphere this imaginary sphere is known as the wave front an instant of time t.

**Definition:** It is the locus of the points which are reached by light waves from a source simultaneously.

**Characteristics of wave front:**

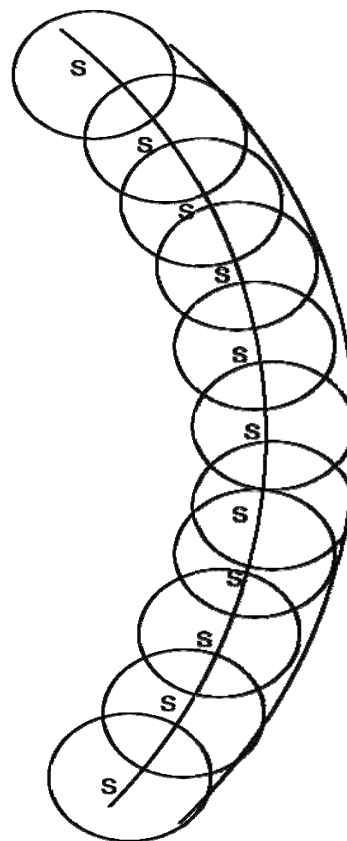
- (1) Every point on the surface of a wave front acts as a secondary source of light emitting secondary wavelets.
- (2) When path difference  $\lambda$  then phase difference  $2\pi$  when path difference x then phase difference  $2\pi \cdot x / \lambda$  All the points on the surface of a wave front are in same phase of vibration.
- (3) Two sources are said to be coherent if they are in the same phase of vibration. Since all the points on the surface of a wave front act as a secondary source of light and all of them are in same phase of vibration hence they act as coherent source.
- (4) The direction of propagation of the wave front i.e. the ray is perpendicular to the surface of wave front.



## Wave Front

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Huygens's constitution of secondary wavelets:



Since every point on the surface of a wave front acts as a secondary source of light hence every points emits a spherical wave front. The imaginary plane in the forward direction which can be drawn by touching the entire sphere which is emitted at the same time is the position of the wave front at that time.