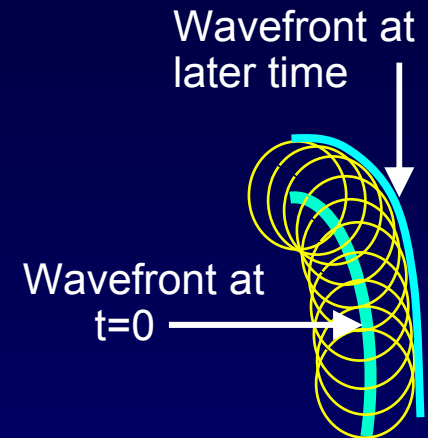# Huygens' principle
A Consequence of Superposition

We will next study what happens when waves pass through one slit. We will use Huygens' principle (1678):
All points on a wave front (*e.g.*, crest or trough) can be treated as point sources of secondary waves with speed, frequency, and phase equal to the initial wave.
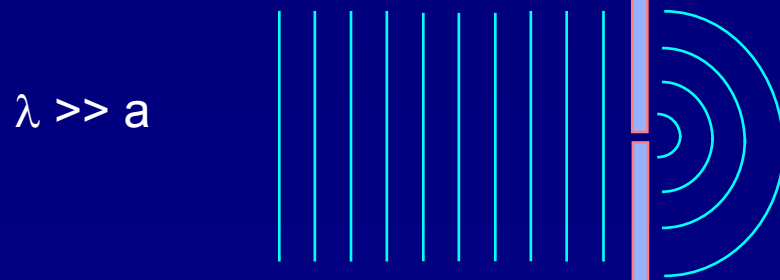
Wavefront at later time

Wavefront at t=0

Q: What happens when a plane wave meets a small aperture?
A: The result depends on the ratio of the wavelength λ to the size of the aperture, a:

$\lambda << a$
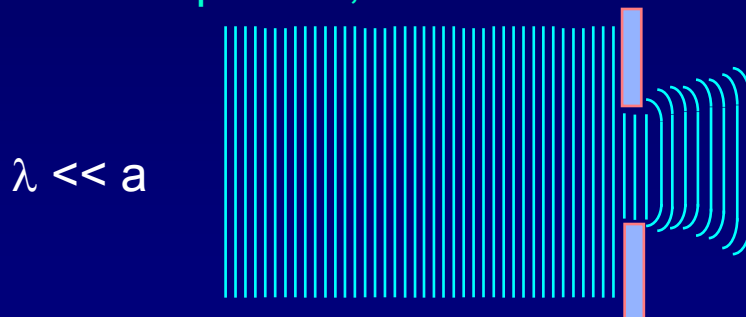
The transmitted wave is concentrated in the forward direction, and at near distances the wave fronts have the shape of the aperture. The wave eventually spreads out.

$\lambda >> a$

Similar to a wave from a point source.

This effect is called *diffraction*.