

Ripple Tank II – Interference and Diffraction

Apparatus

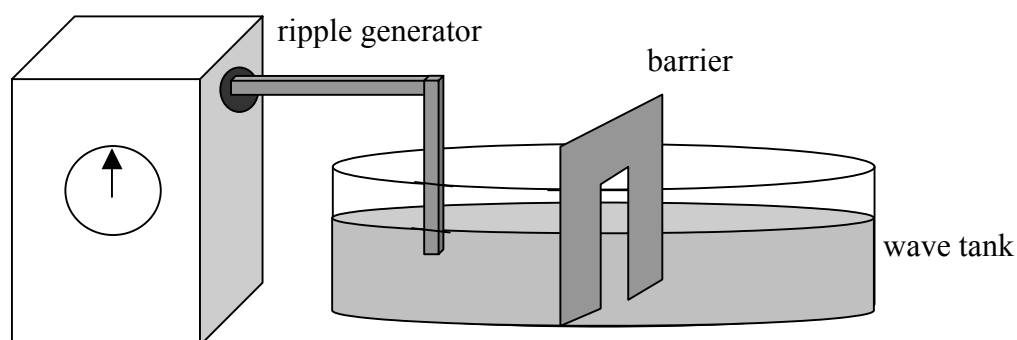
A ripple tank with long source to produce parallel plane waves, several barriers of different sizes and various slits

Action

The students investigate the patterns formed when the waves diffract around objects of various sizes, and through slits of various widths. They also observe interference patterns using multiple slits or sources.

The Physics

Waves passing around objects will show diffraction, as the waves bend around the objects. Waves will pass around small objects with very little bending, but show large diffraction effects with objects of similar size to the wavelength. Waves passing through the two slits interfere to give a pattern of fringes, with spacing depending on wavelength and slit separation. This can also be observed using two in phase sources.



Accompanying sheet

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Use the long wave source to produce parallel wave fronts.

What happens when you put a small object in front of the wave?

What about a larger object?

What happens when these waves pass through a small gap in a barrier?

Explain your observations.