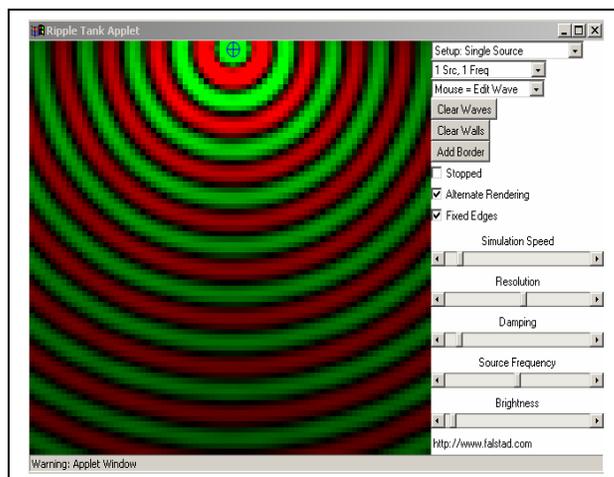


Waves in a Ripple Tank: A Virtual Activity

Go to the site <http://www.falstad.com/oscgrid/>. A "Ripple Tank Applet" window will open that runs a simulation of waves generated in a ripple tank.



By "clicking on" any or all of the three task bars in the upper right hand corner of the applet window, you can change the type and number of wave sources. The third task bar allows you to use the mouse to edit the waves or walls (barriers). You can adjust the speed, resolution, frequency, brightness, and/or damping of the wave simulation to obtain a clearer representation of the wave phenomena. A complete and detailed set of directions for how to use this simulation is linked to the web page.

Your task is to use this web site to identify and investigate various wave properties and characteristics. You will hand in pictorial representations of...

1. Circular Wave
 - a. long wavelength
 - b. shorter wavelength
2. Plane Wave
 - a. long wavelength
 - b. shorter wavelength
3. Reflection
 - a. Plane Wave Off Angled Straight Barrier
 - b. Plane Wave Off Concave (Parabolic) Barrier
 - c. Circular Wave Off Straight Barrier

4. Diffraction
 - a. Plane Wave Around a Barrier
 - b. Plane Wave Through an Opening
 - c. Circular Wave Around a Barrier
 - d. Circular Wave Through an Opening
5. Refraction of a Plane Wave
6. Refraction due to Temperature Gradient (simulates sound wave over lake)
7. Interference
 - a. Two Circular Waves (wide spacing between sources)
 - b. Two Circular Waves (closer spacing between sources)
 - c. One Plane and One Circular Wave (this is a tricky one to simulate!)
 - d. Single Slit (plane wave)
 - e. Double Slit (plane wave)
 - f. Triple Slit (plane wave)
8. Doppler Effect
9. Beats
10. Something else you find really interesting

You have two options for completing this assignment:

1. Make small (about 4 in. x 4 in.) sketches with colored pens/pencils...OR...
2. Use a "screen capture" program to copy and paste the actual images from the applet window into a document (MS Word with text boxes, for example), which can then be saved and printed.

You can download a free trial version of an easy to use screen capture program at <http://www.etrusoft.com/>. The image shown on this handout was "captured" using this program.

You can probably fit 6 diagrams/sketches on each side of a page. **Be sure to label each sketch.**