

Coupled Resonant Pendulums

What you will need: string, dowel stick, washers, scissors, and tape.

What to do:

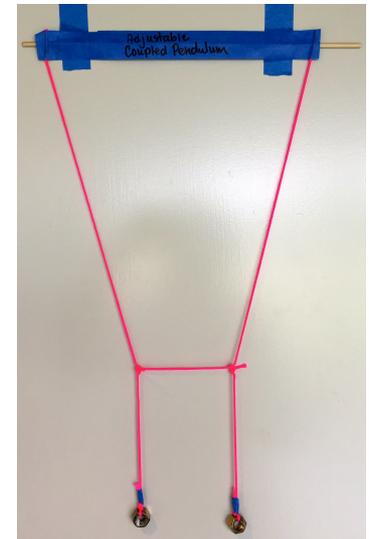
- Cut 3 strings- 2 short and 1 long string.
- Tie the long string to each side of the dowel stick and tape securely.
- Tie the 2 shorter strings to the longer string as shown in the photo, making sure that each string is the same length.
- Tie a nut at the end of each of the short strings. Use tape to secure and prevent motion on the longer string.

To do and notice:

- Gently pull one pendulum back a short distance and let it go. As it swings back and forth, notice that the other pendulum also begins to move, picking up speed and amplitude with each swing. Notice that the pendulum you originally moved slows down with each swing and eventually stops, leaving the second pendulum briefly swinging by itself. Then the process begins to reverse, and soon the first pendulum is swinging again while the second one is stopped.
- The pendulums repeatedly transfer the motion, energy back and forth between them.

What's going on?

As the first pendulum swings it pulls on the neighbor pendulum making its neighbor swing more. As the initially stopped pendulum's motion builds up, it also pulls on the string, slowly bringing the first pendulum to rest. When the pendulum you started comes to rest, its energy has been completely transferred to the second pendulum, which is swinging.



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Pendulums made easy!