

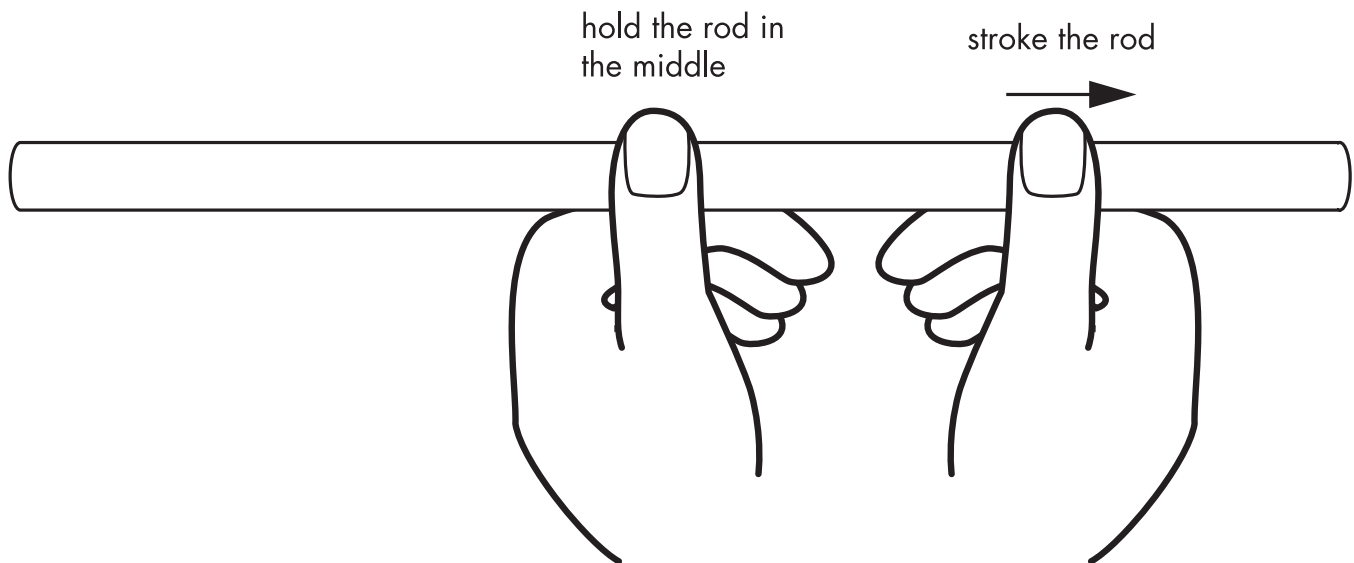
Top 10
Flash
Bang
Demos

Number 9 Singing rods

Prepare to cover your ears for the **piercing sound** of the singing rods

Equipment

- 1 metre aluminium rods (available from DIY outlets)
- Ground up rosin (from a music shop, used by violinists)



Safety precautions

None

whynot
CHEMENG
SHAPE THE FUTURE...

Top 10 Flash Bang Demos

Number 9 Singing rods

Method

- To prepare for this demonstration you will need some rosin (this is available in block form so will need to be ground up into a powder beforehand)
- Hold the rod firmly in the middle with one hand
- Rub some rosin into the fingers of your other hand
- Firmly stroke the rod from the middle to the end and repeat as necessary until the rod begins to 'sing'

The science bit

The rod 'sings' due to a resonance - the build up of standing longitudinal waves. Repeated stroking causes vibrations within the metal rod to become stronger and stronger, creating the waves.

Demonstration tips and interesting facts

It may take some practice to get this to work!

The more you do this on the same rod, the easier it becomes due to a build-up of rosin.

Other things to try

Try using different length rods.

Hold the rod $\frac{3}{4}$ of the way down it's length, only stroking the last $\frac{1}{4}$ - does it sound different?

Once the rod starts 'singing' twirl it around.

Demonstrate the Doppler Effect. Hang the rod by a piece of string in its middle. Make the rod 'sing' and swing the rod like a pendulum - you will hear it change pitch as it swings.

To produce a transverse wave, hold the rod in the middle and strike it with a mallet at one end. You will hear a lower pitch that will die away.

Instructions are in accordance with CLEAPSS guidelines and safety information.