

## **Interference and Beats**

We can all clap our hands and keep a beat. But you can also set up some electronic equipment to set up a regular beat. If one speaker is emitting a pure sound at 300 Hz (300 times per second) and another speaker is emitting a pure sound at 302 Hz, then you hear a 'beat' of 2 beats per second! Two times a second the sound waves constructively interfere with each other and produce a LOUD sound – this is the beat!

**Formula:**    **beat frequency = | f<sub>2</sub>-f<sub>1</sub> |**

The vertical line means absolute value - +ve numbers only!

*Careful:* If one source is vibrating at 350 Hz and one hears 3 beats each second (beats = 3 Hz), then what is the frequency of the other source? It is tempting to quickly say 355 Hz and you would be partially correct. The other source could also be 347 Hz! Remember it is the absolute value of the difference between the 2 sources.