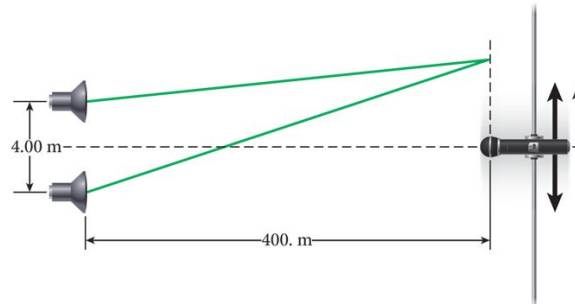


## Practical 9 Questions

1. In a sound interference experiment, two identical loudspeakers are placed 4.00 m apart, facing in a direction perpendicular to the line that connects them. A microphone attached to a carrier sliding on a rail picks up the sound from the speakers at a distance of 400. m, as shown in the figure. The two speakers are driven in phase by the same signal generator at a frequency of 3400. Hz. Assume that the speed of sound in air is 340. m/s.



- At what point(s) on the rail should the microphone be located for the sound reaching it to have maximum intensity?
  - At what point(s) should it be located for the sound reaching it to be zero?
  - What is the separation between two points of maximum intensity?
  - What is the separation between two points of zero intensity?
  - How would things change if the two loudspeakers produced sounds of the same frequency but different intensities?
2. A car traveling at 54 km/h honks its horn as it directly approaches the side of a large building. The horn produces a long sustained note of frequency  $f_0 = 260$  Hz. The sound is reflected off the building back to the car's driver. The sound wave from the original note and that reflected off the building combine to create a beat frequency. What is the beat frequency that the driver hears (which tells him that he had better hit the brakes!)? Speed of sound is 343 m/s.

