Answer on Question #69403-Physics / Other

For a diatomic molecule, the force constant is 240 N/m and reduced mass 'mu' is 1.5×10^{-27} kg. Calculate the frequency of oscillation.

Solution

The frequency of oscillation

$$\omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{240}{1.5\times10^{-27}}} = 4\times10^{14}\ \mathrm{s}^{-1}.$$

$$f = \frac{\omega}{2\pi} = \frac{4\times10^{14}}{2\pi} = 6.37\times10^{13}\ \mathrm{hz}.$$

Answer: $4\times10^{14}\ \mathrm{s}^{-1} = 6.37\times10^{13}$ hz.

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