

Answer to Question #68094, Physics / Mechanics | Relativity

Question:

Five gas molecules chosen at random are found to have speeds of 500,600,700,800 and 900 m/s.What is the rms speed?what is the average speed?

Answer:

The RMS speed (root mean square speed) is calculated as

$$\bar{v} = \sqrt{\frac{\sum v_i^2}{n}} = \frac{\sqrt{500^2 + 600^2 + 700^2 + 800^2 + 900^2}}{\sqrt{5}} = 714.14 \frac{\text{m}}{\text{s}}$$

The average speed is calculated as

$$\frac{\sum v_i}{n} = \frac{500 + 600 + 700 + 800 + 900}{5} = 700 \frac{\text{m}}{\text{s}}$$

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