6.36 B $n=5$ to $n=2$ E released.

Find ① E, ② f, ③ $\lambda$ ✓

① $E = R_H\left(\frac{1}{n_i^2} - \frac{1}{n_f^2}\right)$

$= 2.18\times10^{-18}\left(\frac{1}{5^2} - \frac{1}{2^2}\right)$

$= 2.18\times10^{-18}(-0.21)$

$E = -4.578\times10^{-19}\ J$

② $E = hf$

$4.578\times10^{-19} = 6.63\times10^{-34} f$

$f = 6.9\times10^{14}\ sec^{-1}$

③ $c = f\lambda$ $4.34\times10^{-7}\ M$

$\lambda = \frac{3\times10^8}{6.9\times10^{14}} =$ 434 nM

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2 bigger ( $4.34\times10^{-7}\ m$ ) 2 smaller

$434.\times10^{-9}\ M$

434 nM

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$c = f\lambda$

$f = \frac{c}{\lambda}$

$E = hf$

$E = \frac{hc}{\lambda}$

$E \propto \frac{1}{\lambda}$

$\lambda = \frac{h}{mv}$

DeBroglie Wavelength

$E = R_H\left(\frac{1}{n_i^2} - \frac{1}{n_f^2}\right)$

difference between energy levels.

$hf = R_H\left(\frac{1}{n_i^2} - \frac{1}{n_f^2}\right)$

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6'11 Ayyy

Find $\lambda$

85 kg

$\frac{50\,km}{hr}$

$\frac{50\,km}{hr} \times \frac{1000\,m}{1\,km} \times \frac{1\,hr}{60\,min} \times \frac{1\,min}{60\,sec} = 13.89\ m/sec$

$\lambda = \frac{h}{mv}$

$\lambda = \frac{6.63\times10^{-34}}{(85)(13.89)}$

$5.62\times10^{-37}\ m$

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Uncertainty Principle - Heisenberg

Impossible → exact location
→ speed
$e^-$ at any instant.

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