

Quizzes and short questions QUANTUM ELECTRONICS
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Module 2: Quizzes and short questions

1. Q: Waves at frequencies ω_1 and ω_2 are incident on a non linear crystal. What is the velocity of the nonlinear polarization generated at the frequency $\omega_3 = \omega_1 + \omega_2$?

Answers of module 2 Quizzes and short questions:

A1: The nonlinear polarization generated at the frequency ω_3 would have a space and time dependence of the form

$$e^{i[(k_1+k_2)z-(\omega_1+\omega_2)t]}$$

Hence the velocity of the nonlinear polarization would be

$$v = \frac{\omega_3}{k_1 + k_2}$$