Proceeding in the same way this method can be employed when several collinear ~~sh~~ vibrating influence the ~~nature~~ same particle of the medium. Let n simple harmonic vibrating of the same amplitude a and ~~epoch~~ epoch angles ~~0, 2δ~~ 0, 2δ, 4δ, ... 2(n-1)δ. influences a vibrating particle. If the displacements of vibrating particle are considered along the y-axis, the individual displacements are given by

$$y_1 = a\sin(\omega t - 0) \quad \text{---} (1)$$

$$y_2 = a\sin(\omega t - 2\delta) \quad \text{---} (2)$$

Let A be the amplitude of the resultant vibration and ϕ the epoch angle. Then, the projection of the individual vectors OP, PQ, QR etc. on the y-axis are given by 0, $a\sin 2\delta$, $a\sin 4\delta$ etc. Similarly, the projection on the x-axis are given by $a\cos\delta$, $a\cos 2\delta$, $a\cos 4\delta$ etc.

continue