

$$x(t) = R_0 \left(1 / \gamma^2 + (1 / \gamma) \cos(\gamma ct / R_0) \right) \cos(\gamma ct / R_0)$$

$$y(t) = R_0 \left(1 / \gamma^2 + (1 / \gamma) \cos(\gamma ct / R_0) \right) \sin(\gamma ct / R_0)$$

$$z(t) = (R_0 / \gamma) \sin(\gamma ct / R_0) + vt$$