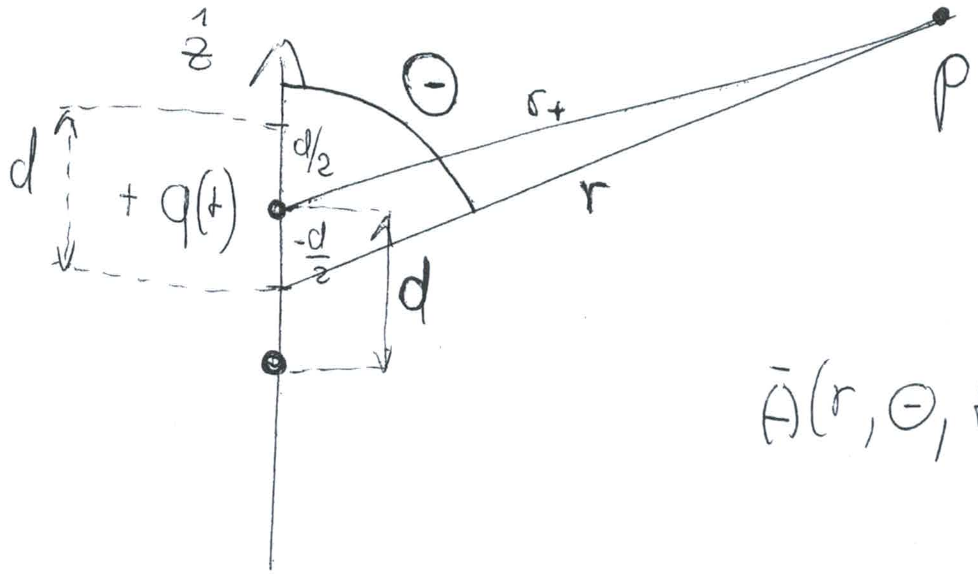
$$\frac{\partial \bar{A}(r,\Theta,t)}{\partial t} \quad \text{at} \quad d \ll \frac{c}{\omega} = \frac{\lambda}{2\pi} \ll r$$



$$\bar{A}(r,\Theta,t) = -\frac{\mu_0}{4\pi} p_0 \frac{\omega}{r} \sin\left(\omega\left(t+\frac{r}{c}\right)\right)\hat{z}$$

$$\hat{z} = \hat{z}(t) = \hat{r}(t)\cos\hat{\Theta}(t)$$

$$\frac{d\hat{\Theta}}{dt} = \omega$$

think when the two ch[illegible] phase or random out of phase.

$$\frac{d\hat{z}(t)}{dt} = \frac{d\hat{r}(t)}{dt}\cos\hat{\Theta}(t) + \frac{d\cos\hat{\Theta}(t)}{dt}\hat{\Theta}$$

$$= \cos\hat{\Theta}(t)\frac{d\hat{r}(t)}{dt} + \frac{d\cos\hat{\Theta}(t)}{d\Theta}\frac{d\hat{\Theta}}{dt}\hat{\Theta}$$

$$= \cos\hat{\Theta}(t)\frac{d\hat{r}(t)}{dt} + \left(-\sin\hat{\Theta}(t)\right)\omega\hat{\Theta}$$

$$= \cos\hat{\Theta}(t)\frac{d\hat{r}(t)}{dt} - \sin\hat{\Theta}(t)\,\omega\,\hat{\Theta}$$