b) Mip-NeRF

$$t_0 < t < t_1$$

$$t \text{ of } x(t)$$

$$\frac{d^T(x-o)}{\|d\|_2^2=1} \qquad \longmapsto : \frac{d^T(x-o)}{\|d\|_2^2}$$

quantity at direction d of position vector x

$$\frac{d^T(x-o)}{\|d\|_2 \|x-o\|_2} = 1 \qquad :$$
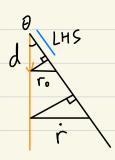
the quantity of d at direction (x-o), suppose the length of direction vector d is 1

$$\frac{1}{\sqrt{1+(\frac{r_0}{\|d\|_2})^2}} = \frac{1}{\sqrt{1+\tan^2\theta}} = \cos^2\theta = LHS$$

when dot r start moving downward from r_0, the expression of RHS = cos^2(θ) from r_0 to dot r, the value of is increasing, the value of RHS is decreasing, so we need LHS > RHS