

作业纸

课程名称: 大物

班级: 63012216

教学班级: 08012204

姓名: 俞乐桐

学号: 1120221303

第 1 页

1-1. $\Delta t = \frac{\Delta t'}{\sqrt{1-\frac{u^2}{c^2}}} = 50s$

地球上(例) 火箭至少用 50s

飞船例. 地球至少用 50s

1-2. $\Delta t = 28$. 固有长度

$$u = c \sqrt{1 - \left(\frac{\Delta t}{\Delta t'}\right)^2}$$

$$\Delta x' = u \Delta t' = 6.71 \times 10^8 m$$

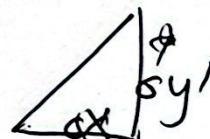
1-3. 飞船 F. $\frac{L}{L'} = \frac{2}{5}$

(1) $L_2 = L' \sqrt{1 - \frac{u^2}{c^2}} \therefore \frac{L}{L'} = \frac{1}{\sqrt{1 - \frac{u^2}{c^2}}} = \frac{1}{2}$

(2) $\frac{L'}{L} = \frac{1}{\sqrt{1 - \frac{u^2}{c^2}}} = \frac{1}{2}$

1-4. $\Delta x' = \frac{\Delta x}{\gamma} = L \cos \theta \sqrt{1 - \frac{u^2}{c^2}}$

$$\Delta y' = \Delta y = L \sin \theta$$



$$L' = L \sqrt{1 - \frac{u^2 \cos^2 \theta}{c^2}}$$

$$\theta' = \arctan \frac{\Delta y'}{\Delta x} = \arctan \frac{\tan \theta}{\sqrt{1 - \frac{u^2}{c^2}}}$$

1-7 $t_1' = t_2'$

$$t_2' - t_1' = \frac{(t_2 - t_1) - \frac{u}{c^2}(x_2 - x_1)}{\sqrt{1 - \frac{u^2}{c^2}}} = 0 \therefore u = -\frac{c}{2}$$

$$x_2' - x_1' = \frac{x_2 - x_1 - u(t_2 - t_1)}{\sqrt{1 - \frac{u^2}{c^2}}} = 5.2 \times 10^8 m$$

联系方式: 19883557844

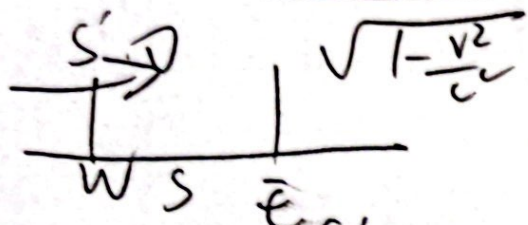
班级:

教学班级:

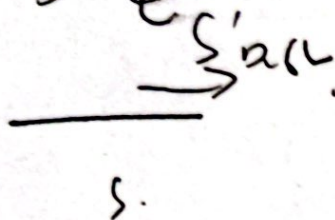
姓名:

1-9. $\Delta t = 0.$

$$\Delta t' = \frac{\Delta t - \frac{v}{c^2}(x_2 - x_1)}{\sqrt{1 - \frac{v^2}{c^2}}} = \frac{-\frac{2vd}{c^2\sqrt{1 - \frac{v^2}{c^2}}}}{\sqrt{1 - \frac{v^2}{c^2}}} \quad \text{E先收到}$$



1-10.



$$\Delta x = \Delta x' = 0.8 \text{ m.}$$

$$\Delta t = \frac{\Delta x}{u} = 4.44 \times 10^{-9} \text{ s.}$$

1-11. $\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} = 3.8$

$$\Delta t = \frac{L}{u} = 4 \text{ a}$$

联系方式: _____

北京理工大学良乡校区管理处监制

电话: 81382088