A spaceship equipped with a gun capable of shooting bullets forward with speed 0.75c travels at speed 0.75c with respect to a planet.

An observer on the planet will see the bullets go with speed

A) 1.5c

B) c

C) 0.75c

D) 0.96c

E) relativity will not allow the gun to fire the bullets this fast

A spaceship equipped with a gun capable of shooting bullets forward with speed 0.75c travels at speed 0.75c with respect to a planet.

An observer on the planet will see the bullets go with speed

A) 1.5c

Can't go faster than light, or even as fast as light.

B) c

0.75c makes no sense as the bullet would not be moving w.r.t. the ship

C) 0.75c

E) violates principle of relativity - if you can fire the bullets this fast at rest, you can fire them this fast when moving

D) 0.96c

E) relativity will not allow the gun to fire the bullets this fast

Let v=c in the speed addition formula. What do you get for $\tilde{u}$?

A) you can't use the formula as nothing can move at the speed of light

B) c

C) c+u

D) c-u

E) u

Let v=c in the speed addition formula. What do you get for $\tilde{u}$?

A) you can't use the formula as nothing can move at the speed of light

B) c

Just plug it in and simplify

C) c+u

D) c-u

E) u

In frame A, two events happen at the same time, separated by distance D. Frame B moves with speed v relative to frame A. In frame B, the spacetime interval between these two events is

A) $-D^2$

B) $-(D/\gamma)^2$

C) D^2

D) $(\gamma D)^2$

E) not enough information

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Details in the next lecture - do the computation yourself!