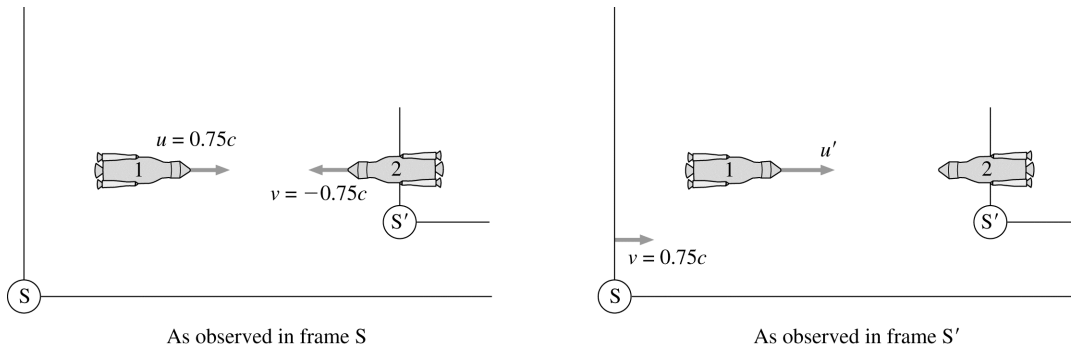


36.57. Model: Let S be the earth's reference frame and S' be the reference frame of one rocket. S' moves relative to S with $v = -0.75c$. The speed of the second rocket in the frame S is $u = +0.75c$.

Visualize:



Solve: Using the Lorentz velocity transformation equation,

$$u' = \frac{u - v}{1 - uv/c^2} = \frac{0.75c - (-0.75c)}{1 - (0.75c)(-0.75c)/c^2} = 0.96c$$

Assess: In Newtonian mechanics, the Galilean transformation of velocity will give $u' = 0.75c - (-0.75c) = 1.50c$. This is not permissible according to the theory of relativity.