Ralph Malcolm Rabbidge's Light Pulse

Paul B. Andersen

May 30, 2011

In a variant of the 'light clock thought experiment' a short light pulse (say 0.3 mm long, 0.3 mm wide) is bouncing up and down within a tube with a mirror at each end.

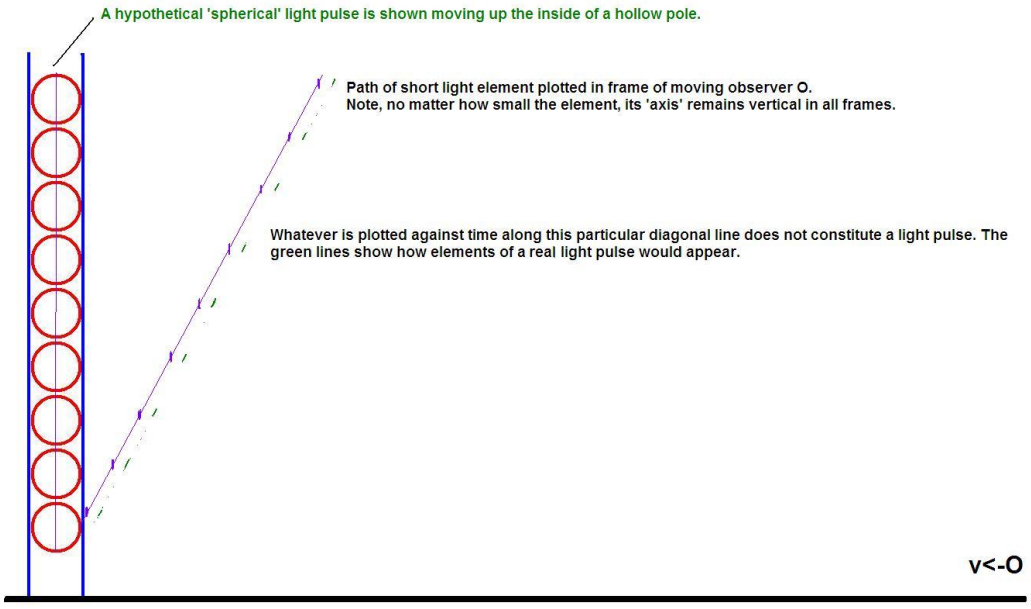
The question is: What is the path of the light pulse in an inertial frame of reference which is moving in a direction perpendicularly to the tube?

The answer is obviously that the path of the pulse will be a zig-zag line. When the pulse is moving upwards, the path will be a diagonal line leaning in the direction of motion.

Ralph Malcolm Rabbidge, who is posting in the usenet-group sci.physics.relativity under the pseudonym Henry Wilson, does not agree. According to him whatever is moving diagonally isn't a light pulse, because:

> "Light pulses cannot be regarded as infinitesimal points. If they were they couldn't carry energy or do anything at all really. They would be 'nothing'."

To defend that claim, he posted this figure:



> "Whatever is plotted against time along this diagonal line does not constitute a light pulse. The green lines show how elements of a real light pulse would appear."

So whatever is moving diagonally in the moving frame of reference isn't a light pulse.
What is it then?