

THEORETICAL PROOF OF ALICE LAW

– TUBE –

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INTRODUCTION

I first published the main idea of this work on 23 October 2000 in my first article, entitled “[Proof of \$\(c+v\)\$ \$\(c-v\)\$ – The Speed of Light Is Relative.](#)” Since I believed that this work offered a direct proof of the existence of Alice Law, I included different versions of the article in all Alice Law programs.

Over time, I considered presenting the same subject inside a tube isolated from external conditions. In April 2010, I published an article entitled “The Tube and the Golden Rule of Special Relativity.” In August 2025, I updated this article under the title “[The Tube and the Theoretical Proof of Alice Law.](#)”

Naturally, I also needed to include this work in Alice Law Version 9. Here, I improved the animations and tried to make the explanation as complete as possible.

HOW THE PROOF IS STRUCTURED

The proof of the existence of Alice Law consists of two stages.

In the first stage, the problem to be solved is defined, and the Existing Theories of physics are asked to solve it. “Existing Theories” includes Classical Mechanics, Electromagnetic Theory, and the Special Theory of Relativity.

Before proceeding to the second stage, the following conclusion is expected on behalf of the “Existing Theories”:

“The problem could not be solved using our current body of knowledge.”

At this point, Alice Law enters the picture and solves the problem by presenting its own approach. The existence of only one option for solving the problem proves the existence of Alice Law.

Nor can it be argued that the problem has no solution, because it is clear that a solution must exist.

INTRODUCING THE TUBE APPARATUS

The tube is an apparatus designed according to the principle of symmetry.

Inside the tube are two slides that can move in opposite directions. There is a light source at each end of the tube. The apparatus operates by sending a beam of light toward the slides from each side while the slides are moving.

Relative to the axis of symmetry marking the midpoint of the tube, the slides are always at equal distances and occupy positions that are mirror images of one another. Their speeds are equal in magnitude.

Light sensors are placed at the edges and midpoint of each slide. Measurements are made using these sensors. The edge sensors are partially transparent, allowing light to pass through them and continue on its way. The middle sensors are opaque and serve as the final destinations of the light.

An adjustable trigger mechanism allows the light sources to be activated at the desired moment. When the triangular projections at the centers of the slides align with the triangles of the trigger mechanism, the light sources are triggered, and a beam of light is emitted from each end of the tube. This study assumes that there is no time delay between triggering and light emission. We also assume that the emitted beams are directed entirely at the slides and propagate in a regular rectangular shape.

Each slide has three indicator lamps that provide information about the event: left, middle, and right. If the light reaches the left and right edge sensors of a slide simultaneously, the edge lamps turn green; otherwise, they turn red. The same applies to the middle sensor. If the light from both directions reaches the middle sensor simultaneously, the middle lamp turns green; otherwise, it turns red.

Each slide has two clocks. Each clock shows how long the light arriving from its respective side takes to travel the distance between the edge sensor and the middle sensor.

The upper part of the table at the bottom left of the page displays the light speeds measured by the slide.

The lower part of the table displays the arrival times of the light at the edge and middle sensors, as well as the distance of the slide from the axis of symmetry. According to the principle of symmetry, an event occurring on one slide also occurs simultaneously on the other. Therefore, the measurements in the table apply to both slides.

All data in the animation are defined relative to the reference frame of the tube.

ANIMATION CONTROLS

The lengths of the tube and the slides can be changed using the controls on the right.

The color and transparency of the light can be adjusted.

In the animation, the slides are programmed to move at a speed of 1 px/frame.

The speed of light can be set between 1 and 10 px/frame.

Therefore, when interpreting the animation, the speed of the slides should be understood as a relative value:

Slide speed = c / selected light-speed value

After configuring the animation as desired, press the “Start” button to play it automatically. You can also operate the animation manually using the control slider.

The animation has two operating modes: “Existing Theories” and “Alice Law.” The behavior of the light changes according to the selected mode.

DEFINITION OF THE PROBLEM

Problem statement: Using the apparatus, arrange for the light emitted from both ends of the tube to reach the middle sensors of the slides simultaneously.

Prerequisite

Although the problem may appear simple, it has an inherent prerequisite. Imagine placing a lamp at each edge of a slide. If we switch these lamps on simultaneously while the slide is moving, their light reaches the sensor at the middle of the slide simultaneously. (The Galilean Principle of Relativity is commonly used to explain this situation.)

Therefore, solving the problem requires the following condition: the light must first reach the left and right edge sensors of the slides simultaneously. Only when this condition is satisfied will the light reach the middle sensor of each slide simultaneously.

Revised problem statement: Using the knowledge provided by the Existing Theories, demonstrate a solution that allows the light emitted by the tube’s lamps to reach the edge sensors of the slides simultaneously and then reach their middle sensors simultaneously.

THE PROBLEM IS NOT INSOLUBLE

It cannot be claimed that the problem has no solution. Consider using a single slide and the sensor at its midpoint. There must be a situation in which the light from both directions meets at the middle sensor. Since the apparatus operates in a way that preserves symmetry, the same situation will also apply to the other slide.

The edge sensors form the lock of the problem. The prerequisite that the light reach the edge sensors simultaneously ensures that the problem is properly formulated. Since this condition is upheld by the Galilean Principle of Relativity, it should not be rejected.

We could also construct the same problem by replacing each edge sensor with a pair of mirrors inclined at 45 degrees. In that case, the sequence would be as follows: incoming light reflects off the first mirror, then immediately off the second mirror, and travels toward the middle sensor. If the light from the two sides does not reach the mirrors simultaneously, it cannot reach the middle sensor simultaneously.

Without the edge sensors, the problem produces a result detached from reality.

WHY THE EXISTING THEORIES CANNOT PROVIDE A SOLUTION

For the Existing Theories—including special relativity (SR)—the situation is as follows: from the moment of emission, the light travels toward the slides at speed c .

Its arrival at the slides occurs as follows:

- Suppose the light reaches the edge sensors simultaneously. In that case, it cannot reach the middle sensors simultaneously (“Demo 1” button).
- Suppose the light reaches the middle sensors simultaneously. In that case, it will not have reached the edge sensors simultaneously (“Demo 2” button).

Furthermore, because of the principle of symmetry, the solution must be achieved simultaneously for both slides.

There is no solution when SR is used either.

You may think that SR can provide a solution. Try it. The animation has been programmed using the tube’s reference frame. Using the data in the animation, or by creating a similar animation, you can program the events according to SR. It would not be appropriate for me to write here how the events would unfold according to SR. You can access the source code of this work [here](#).

Ultimately, the Existing Theories cannot open the lock and cannot provide any solution.

The solution lies beyond the knowledge of the Existing Theories.

At this stage, we can now say: **The theory that provides the solution will be the correct theory.**

ALICE LAW SOLVES THE PROBLEM

Since the Existing Theories cannot provide a solution, we can now think more freely. We are free to move beyond the limitations of the Existing Theories.

To find a solution, let us first consider the reference frame of a single slide. Let us assume from the outset that the light approaching the slide has speed c in the slide's reference frame. Let us emit light simultaneously from the left and right, at equal distances from the midpoint of the slide. The light approaching from both directions will then remain at equal distances from the midpoint at every moment. Consequently, it will reach the edge sensors simultaneously and then reach the middle sensor simultaneously. Furthermore, neither the length of the slide nor the length of the tube will change the result. In this situation, it is also clear that the slide will always measure the speed of the incoming light as c .

Now let us consider two slides. To obtain a solution, the light must be emitted from equal distances from the center of each slide. There is only one position that can provide the solution: the light must be triggered when the midpoints of the slides are on the axis of symmetry.

So far, so good. But the light must reach both slides, moving in opposite directions, simultaneously. If we keep the light as a single undivided beam, this cannot happen. This is where we introduce the revolutionary idea and say:

Light travels at speed c relative to the reference frame of its destination.

As a consequence of this idea, we accept that the light emerging from the tube must separate. We can explain this as follows:

The light emerging from the tube initially forms a beam of photons. The destination of each photon in the beam will be one of the two slides. Therefore, photons traveling toward the same slide will form a group. The result will manifest itself as a separation of the light. Each group of photons will take its own destination as its reference and travel toward it at speed c .

Let me tell you something interesting. The statement "Light travels at speed c relative to the reference frame of its destination" is not actually unique to Alice Law. When it is said that "The speed of light is c in all reference frames," this naturally includes the statement made by Alice Law. What is wrong is to think that the speed of light is c in all reference frames. The solution offered by Alice Law shows that the light-speed constant c is a constant defined relative to the destination. This new knowledge is what solves the problem.

If we define the velocities of the slides as $+v$ and $-v$, then, in the tube's reference frame, the light sent from the left toward the lower slide moving to the right at velocity $+v$ has speed $(c+v)$, while the light sent from the right has speed $(c-v)$. In Alice Law, this mathematics is called " $(c+v)$ $(c-v)$ Mathematics," now known as "Alice Mathematics."

Alice Law is the only option capable of solving the problem. Therefore, we can say that this solution constitutes a proof of the existence of Alice Law.

Respectfully,
Han Erim