Conservation Of Displacement From Isotropic Symmetry

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https://sites.google.com/view/physics-news/home

(Dated: August 15, 2020)

The length of a rod in motion may be different from the length of another identical rod at rest. The difference in length between two rods is independent of the direction of the motion of the moving rod. The isotropic symmetry demands that the difference in length is conserved in any direction. All moving rods are of identical length as long as the speed of motion is identical. The center of two rods in anti-parallel motion will coincide. The ends will also coincide. Such end-to-end match exists in all reference frames. The length of a rod is independent of reference frame and motion.

I. INTRODUCTION

The isotropic symmetry exists between two identical rods moving at the same speed but along two random radial directions. The length of both rods is identical if the speed of both rods is identical. The length of a rod in motion may be different from the length of an identical rod at rest. The difference in length is independent of the radial direction.

The isotropic symmetry becomes parity symmetry in one-dimensional space. Two identical rods in anti-parallel motion will exhibit isotropic symmetry. The centers of each rod will form parity symmetry. As the rods move toward each other, the centers of the rod will coincide. The ends of each rod will also coincide with the ends of the other rod if both rods are of identical length.

II. PROOF

A. Isotropic Symmetry

Two identical rods, ROD$_1$ and ROD$_2$, are stationary relative to a reference frame F$_3$. The rest frame of ROD$_1$ is F$_1$. The length of ROD$_1$ is L$_1$. The rest frame of ROD$_2$ is F$_2$. The length of ROD$_2$ is L$_2$.

Both ROD$_1$ and ROD$_2$ are stationary relative to F$_3$. Therefore,

$$L_1 = L_2$$  (1)

Let $t_3$ be the time of F$_3$. At $t_3 = 0$, let ROD$_1$ be under acceleration A relative to F$_3$ in a random radial direction from the origin of F$_3$. Let ROD$_2$ be under acceleration A relative to F$_3$ in another radial direction from the origin of F$_3$. Each rod is aligned with its direction of motion. F$_1$ becomes different from F$_2$.

Let L$_3$ be the length of the third identical rod that is stationary relative to F$_3$. The isotropic symmetry in F$_3$ demands that the difference between L$_1$ and L$_3$ is identical to the difference between L$_2$ and L$_3$.

$$L_1 - L_3 = L_2 - L_3$$  (2)

Eliminate L$_3$ from both sides,

$$L_1 = L_2$$  (3)

In F$_3$, the length of ROD$_1$ is identical to the length of ROD$_2$ at any time as long as both rods move at identical speed.

B. Parity Symmetry

Confine the motion of the rods to one dimension. The isotropic symmetry becomes parity symmetry.

Let 3 identical rods be stationary relative to F$_3$. The center of ROD$_1$ is located at R position. The center of ROD$_2$ is located at -R position. The center of ROD$_3$ is located at the origin. Let the length of rod be L$_1$ for ROD$_1$, L$_2$ for ROD$_2$, L$_3$ for ROD$_3$.

$$L_1 = L_2 = L_3$$  (4)

At $t_3 = 0$, put ROD$_1$ and ROD$_2$ into anti-parallel motion. Let ROD$_1$ be under acceleration A relative to F$_3$ in -x direction. Let ROD$_2$ be under acceleration A relative to F$_3$ in +x direction. Both rods move toward each other and will meet at the origin.

The centers of both rods move at the same speed and will reach the origin at the same time.

The parity symmetry demands that the difference in length between ROD$_1$ and ROD$_3$ as observed from F$_3$ is identical to the difference in length between ROD$_2$ and ROD$_3$ as observed from F$_3$.

$$L_1 - L_3 = L_2 - L_3$$  (5)

Eliminate L$_3$ from both sides,

$$L_1 = L_2$$  (6)

Both rods in motion are of identical length in F$_3$.

As the center of ROD$_1$ coincides with the center of ROD$_2$ in F$_3$, the ends of both rods also coincide. The end-to-end match on both rods exists due to the identical length, L$_1 = L_2$ in F$_3$.

However, the end-to-end match exists in all reference frames if it exists in one reference frame. Therefore, ROD$_1$ and ROD$_2$ are of the identical length in all reference frames.
III. CONCLUSION

The length of an object is independent of its motion. The isotropic symmetry corresponds to the conservation of the length in all reference frames. Lorentz transformation[1.2.3] incorrectly claims the length of a moving object depends on its speed. This has been proved to be false. Consequently, the theory of special relativity, which is based on Lorentz transformation, is also false. Furthermore, any theory that violates the conservation of space displacement is invalid in physics.