

Where Is The Kinetic Energy of a Bullet Stored?

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When a bullet is fired, an explosive charge imparts kinetic energy to the bullet. That kinetic energy travels with the bullet and is transferred to the target when the bullet strikes. The question to be answered is where that kinetic energy resides while the bullet is in flight. It obviously travels with the bullet as is shown by the fact that stopping the bullet anywhere along its flight path will impart that energy to the stopping means. Where that energy is stored is revealed by the corrected Lorentz Transformations for Velocity using the more rational F,L,T system of units. To accomplish this it is first necessary to correct an error made in the derivation of the Lorentz Transformation for Transverse Force. Apparently, for some hare-brained reason, this transformation was apparently derived using Maxwell's Equations instead of making use of the basic Lorentz Transformations and $E=M*C^2$ alone. The use of this approach led to the conclusion that the Lorentz Transformation for Transverse Force was the reciprocal of its correct value. The fact that an error existed in that derivation was revealed by the classic "Right Angle Lever Paradox" which those familiar with undergraduate level physics and/or mechanics should be able to demolish in a few minutes.

Let us consider that an idealized bullet which, when at rest consists of three ideal "mass less" springs at right angles to each other and aligned with one of the springs parallel to the bullets of the path. The "rest mass" of the bullet is then inserted in the springs by compressing them equally. The energy stored in each of the springs is half of the product of the distance of their compression and their stiffness. When kinetic energy is added to the bullet, the force compressing the parallel spring is increased by the Lorentz Transformation for Parallel Force, which is unity, while the distance of compression is reduced by the Lorentz Transformation for Length and energy must LEAVE the parallel spring. WE can conclude, as a result, that energy must leave the parallel spring and travel in the space around it (presumably in a disk oriented perpendicularly to the velocity vector).

In the transverse axes, however, a different situation exists. The distance which these springs are compressed is unchanged by the velocity but the force required to compress the spring is INCREASED by the Lorentz Transformation for Transverse Force. As result, the energy of compression stored in the transverse springs is increased propo